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AMIGA SHOPPER

The top-selling serious Amiga magazine

ISSUE 12 • APRIL 1992 • £1.25 • YOUR DEFINITIVE GUIDE

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HARD DRIVES

8 EASY pages of HARD facts & advice!

What size?
What speed?
What sort?
How much hassle?
How much RAM?
How much DOSH?

The fact-packed Amiga Shopper Drive Guide has all the answers

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We'll help you master your Amiga

AMIGA ANSWERS

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THE A690

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AMIGA SHOPPER AT A GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. The subjects covered in Amiga Answers are detailed on page 43; the many PD programs covered on page 144 are listed there. The page numbers given are for the first page of the article in which the product is mentioned.

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Are there any products or subjects you'd like us to take a look at? Well, just drop a line to:
Amiga Shopper,
30, Monmouth Street,
Bath BA1 2BW.

WELCOME

Ask anyone who's got one and you'll always get the same answer – "I don't know how I ever did without it."

Yep, a hard disk – after a word processor and printer, the single most sought after kit there is. And why is this ? Well, the effect of a hard disk is immediate. A little like buying a filofax after trying to organise your life on pocketfuls of scrap paper. Because, let's face it, poor old floppy disks are like... well, best fill in your own motorist analogy here but let's just say they're slow, they get lost easily and they're prone to crashes!

But purchasing a hard disk is a minefield because there are so many types, capacities and speeds to consider before you even begin to consider things like on-board RAM. So on page 18 we've addressed all the questions you should bear in mind if you're considering buying one. And just for good measure we've added another three pages of solutions to some of the most commonly posed problems.

One problem you're never likely to encounter with Commodore's forthcoming CD-ROM drive is storage capacity – there's a whopping 550 Mb of it available. But that, it seems, is one of the few 'officially endorsed' features of the drive.

As we go to press, it's not clear whether it's even called the A690 anymore, what its price will be, when it will be available or indeed, whether the model we've reviewed on pages 10 and 11 will look anything like the final version.

At the moment though, none of these things really matter. What matters is that you, the reader, get a clear indication of what to expect from the most exciting release the Amiga's ever seen. My private guess is that the machine we've reviewed is, as near as damn it, complete. And it looks extremely promising. So, like me, you might want to start saving your pennies well in advance.

Andy Stoner

Editor

PUBLIC DOMAIN WORLD

There are thousands of Amiga programs which are available for little more than the price of a disk. And many more which allow you to try the software free before you buy. Each month in Public Domain World we examine the best of these programs and explain how to get hold of them.

This month our PD sampler Ian Wrigley scans through his latest batch to review:

- **bBase II – a small but complete database**
- **Med 3.20 – the last of the great trackers for free**
- **TMKBP – how to switch between Kickstarts**
- **A64 – a fully-functioning C64 emulator**
- **Image Utils – a great collection of pic manipulators**

BUT THAT'S NOT ALL!... JUST TURN TO PAGE 144

AMIGA ANSWERS

ELEVEN PAGES DEVOTED EXCLUSIVELY TO ANSWERING YOUR QUESTIONS

Every month in Amiga Answers our panel of experts answer more genuine reader questions than any other Amiga magazine. Whatever your problem, whether you're a beginner or a more advanced user, there's not much which foxes our experts. If you're looking for answers, look no further.

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software and more.

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FOR A FULL LIST OF CONTENTS, TURN THE PAGE

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Issue 12 April 1992

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Assistant Publisher: Stuart Anderton
Circulation Director: Sue Hartley
Promotions Manager: Michele Harris
Group Publishing Director: Greg Ingham
ABC audited circulation: July-December 1991: 45,209 copies/month
Printed by Thamesmouth Printing
News Trade Distribution –
UK: Future Publishing 0225 442244
Worldwide: MMC Ltd 0483 211678

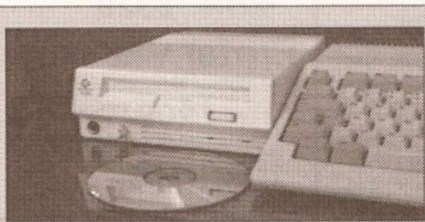
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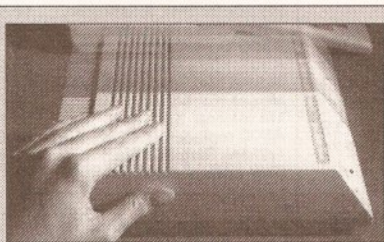
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THE LONG-AWAITED ROM UPGRADE PACK IS NOW ON THE STREETS

Kickstart 2 available

Official Commodore Workbench and Kickstart 2 upgrades are now shipping. Silica Systems is selling the upgrade pack for £79.95. It consists of a Kickstart 2 ROM, manuals, installation instructions and three disks: Workbench 2, Extras and Fonts.

Disappointingly, the upgrade does *not* include the Super Fat Agnus and Super Denise of the Enhanced Chip Set which are found in the A500 Plus. This means that some of the new screen modes supported by Workbench 2 will not be useable.

Nevertheless, the latest version of the operating system offers many advantages to Amiga owners: an improved Workbench display with a 3D look, a greater choice of colours on-screen, easier customisation, and less bugs. In addition, much of the underlying code has been re-written for greater efficiency and speed. Although there are problems running some older programs with Kickstart 2, these are far outweighed by its advantages.

Fitting the ROM involves removing the Amiga's casing and first removing the old ROM. Doing this will invalidate the warranty, if it is still valid. To avoid this, users are encouraged to send their machines along with the upragde to FMG, Commodore's official repair centre. FMG will then carry out the necessary modifications without harming the warranty. The cost for this service is £20 plus a further £7.50 for postage.

Once again, Commodore has chosen to launch an important product on to the market without an official announcement. Readers may remember the unheralded appearance of the A500 Plus in October of last year. More recently, A1500 Pluses have become available in shops in the UK after first popping up on the continent. When will Commodore learn to let its customers know what is going on?

Kickstart 2 upgrades cost £79.95 from Silica Shop on ☎ 081 309 1111.

BANG ON TIME

Punctuality obsessives will be interested in a new clock from Hewlett-Packard.

The HP 5071A is claimed to be the most precise atomic clock in the world, losing a single second every 1.6 million years. Despite this, it is only warrantied for 5 years.

The clock costs $54,000 from Hewlett-Packard on ☎ 0344 360000.

PROFESSIONAL PAGE UPGRADED

The long-awaited version 3 of *Professional Page* is finally shipping in America.

The latest incarnation of Gold Disk's aclaimed DTP package includes many enhancements. The most innovative is the addition of 'Genies', automatic functions which perform often-needed tasks such as envelope addressing, mail merge from an external database, grid and table creation. Further Genies can be created by the user with ARexx commands. Five new AGFA Compugraphic typefaces are supplied, making a total of seven, all scalable in 0.125 point increments.

With last month's release of a new version of Soft-Logik's *PageStream*, the battle between the giants of the Amiga DTP world looks set to go another round. *PageStream* incorporates a feature termed HotLinks, enabling it to communicate with structured drawing packages and the like. Interestingly, *Professional Page 3* also has a 'hot link' (with lowercase letters) to the forthcoming version 3 of Gold Disk's *Professional Draw*.

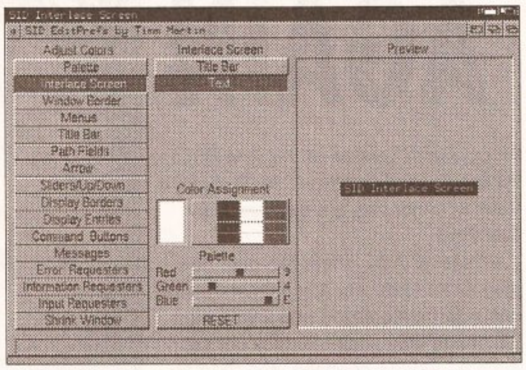
Professional Page 3, when it reaches these shores, will be distributed by HB Marketing on ☎ 0753 686000. A price is yet to be announced. Gold Disk can be contacted on ☎ 010 1 416 602 4000.

VERSION 2 OF THE DIRECTORY UTILITY SID NOW AVAILABLE

New SID on the block

Snappily entitled *SID 2*, this shareware utility enables the user to move and copy files without all that tedious messing with the Shell. Furthermore, files can be previewed: for example, an ANIM file can be run, a text file can be read and edited, music files played, pictures viewed, and so on.

SID is able to recognise a wide variety of file formats, including ILBM and GIF pictures, SuperBase files, Toaster files, and several archive types.



***SID*'s EdiPrefs program which enables the user to change buttons, colours, fonts and layouts for *SID*. Here the colour palette is being altered**

The key innovation over the earlier version is in *SID*'s configurability. File creation dates can be displayed numerically or as text; time can be displayed in 24 hour or am/pm format, and the colours of just about everything – window borders and text, screen borders and text, menus, gadgets, files and directories, and error messages can be changed.

Registered *SID* users can download the upgrade from the SID bulletin board for free, or pay US 10$ for a disk update via airmail. Unregistered users can obtain a copy for $25 from Timm Martin, PO Box 10084, Largo, FL 34643, USA.

See you later, animator

A new animation package, *Take 2*, is being released by Rombo.

Supporting all Amiga screen modes, including HAM, *Take 2* enables the artist to use IFF files or ANIMs to create animations with up to four levels. Four channel sound can also be incorporated. The package can be used in conjunction with Rombo's Complete Colour Solution, so the artist can draw outlines in pencil, digitise them and then use a paint package such as *Deluxe Paint* to add colour.

Take 2 costs £99.95. It is available in a pack with the Complete Colour Solution for £249.95. Rombo can be contacted on ☎ 0506 414631.

CDTV DEVELOPMENTS

A NUMBER OF MAJOR DEVELOPERS ARE PLANNING TO RELEASE FORTHCOMING TITLES IN BOTH AMIGA AND CDTV FORMATS

The number of CDTV users is small at the moment, but is expected to rise to something like 100,000 with the release of the CD-ROM drive for the Amiga. Whether Amiga owners with CD-ROM drives will be prepared to pay the extra money for a title on compact disc, as opposed to floppy, will depend largely on the extras offered by the former. Jonathan Ellis, managing director of Psygnosis, commented that: "Using the same technology to develop for both the Amiga and CDTV is a cost-effective method of producing software for two formats." This suggests that the difference between two versions of a particular title will be minimal, with perhaps extra levels, better graphics and sound for the CDTV version.

Commodore is stessing that developing for CDTV has the added advantage of making software difficult to pirate because of the cost involved in copying CDs.

This does have a down side: the cost will prevent many of the smaller companies from being able to afford to produce CDTV titles at all.

It will be the larger companies such as Electronic Arts and Psygnosis which will lead the way in CDTV development, particularly in the entertainment field. And it won't be until companies such as these start producing dedicated titles, which make full use of the 640 floppy disk capacity that a compact disc gives, before the CD revolution hits the Amiga world.

COMPRESSIVE IMAGES

An innovative image compression technique has been announced by Iterated Systems. Already gaining acceptance in the PC market, Fractal Image Compression could well be a graphics standard on the Amiga in the near future.

The technique involves searching for fractals – endlessly repeating patterns found in nature – in the source image and coding these as mathematical formulae rather than storing the picture as a bitmap. Compressed pictures are of the order of 70 times smaller than their originals.

Currently, the preferred standard is JPEG (Joint Picture Experts Group). One disadvantage of this technique is that the times for compression and subsequent decompression for re-displaying are roughly equivalent, meaning that dedicated chips are necessary for all but the most powerful systems if speed is an important factor. With Fractal Compression, the compression stage is still computationally intensive, but decompression is a relatively simple, quick affair. Consequently, applications producers can compress their images (using either a hardware board or software) and include code in their products to decompress the images at an acceptable speed.

Iterated Systems can be contacted on ☎ 0734 880261.

POLICE SEIZE AMIGAS

The Metropolitan Police are working to produce an Amiga-based training system along the lines of that already developed by the Scottish Police College.

Vistrain, the Scottish system which simulates a soccer match and requires officers to make crowd control decisions, was on display at last year's Multimedia Show. Financed by the Government in a joint project with the National Computing Centre, the system has been in use since last March.

Although the system will initially be very similar, the Met hopes to eventually create a system capable of training officers for more diverse public order situations.

GVP AND SUPRA JOIN COMMODORE

AMIGA SHOPPER SHOW
WEMBLEY EXHIBITION CENTRE • MAY 15 - 17

HEAVYWEIGHTS LINE UP FOR THE BIGGEST AMIGA SHOW EVER

The UK's only 100% Amiga event this year, the Amiga Shopper Show, taking place at Wembley from May 15-17, further consolidated its position as the premier showcase for new Amiga products after Commodore, GVP and Supra all announced they will be attending in force. Other well-known US manufacturers are also pencilled in for the exclusive event which will offer Amiga owners product launches, tutorial and advice sessions and, of course, bargains, bargains and bargains galore.

Hard to believe, but over 30% of the stand space was booked within the first three weeks of the show's announcement. And now, at the time of going to press, over 50% has been filled provisionally.

The show's going to be entirely dedicated to the computer we all know and love: you'll see the Amiga at its best and have the opportunity to buy the best for the Amiga.

As well as renowned hardware manufacturers GVP and Supra, there'll be a whole host of UK and European companies present to display their new products and offer amazing deals. Some of the big names already committed are Checkmate Digital, Cortex, Digita, HiSoft, Power, Precision, Rombo, Silica, WTS and Zone. Whether you use your Amiga for graphics, DTP, video, programming, music or education, you'll find plenty to keep you occupied.

But there's more. The Amiga Shopper Show wouldn't be the same without the Amiga Answers panel. Our consultants, renowned for their technical knowledge, will be holding question and answers sessions throughout the show. So, pack up your problems and bring them along to us! We'll sort them out, no problem. There'll also be tutorial seminars from some of the leading Amiga software developers. You'll also be able to meet the editors! As well as your editor Andy Storer, there'll also be Damien Noonan of *Amiga Format* and Matt Bielby of *Amiga Power* on hand to field your questions. This is your chance to decide the future direction of your favourite magazines.

If all of this seriously good software and hardware gets a little too intense, you can take a break in the *Amiga Power* games arcade, where you can play for prizes on both the latest, hottest games and the old classics.

We want this to be *the* best Amiga show, and for that we need your help. Turn to page 67 and fill out the freepost form, telling us who and what you want to see there.

You can obtain show tickets on our hotline ☎ 051 356 5085 – a free show guide will be sent to those booking in advance. Prospective exhibitors should call Mike Jennings on ☎ 0225 442244.

SCAN AGAIN

An upgraded version of the *DAATAscan Professional GS* software for Pandaal's hand scanner has been released by City Beat.

Version 2.02 offers the user new grey scale features. Any dithered image can now be displayed and saved as a 16 shade grey scale. Further editing, such as palette changes, can then be carried out via a package such as *Deluxe Paint*.

The new version of the software will be supplied henceforth with Pandaal's hand scanner. Existing users can upgrade for £24.95. City Beat is on ☎ 0234 857777.



The *DAATAScan Professional GS* software, going grey as time moves on

Diary Dates

March 7: **Computer Technology Fair.** Cardiff City Hall. ☎ 0273 607633.

March 8: **All Formats Computer Fair.** City Hall, Candleriggs, Glasgow. ☎ 0225 868100.

March 14: **All Formats Computer Fair.** Horticultural Hall, Westminster. ☎ 0225 868100.

March 15: **Computer Technology Fair.** The Forum, Mancheser. ☎ 0273 607633.

March 15: **All Formats Computer Fair.** Brunel Centre, Bristol. ☎ 0225 868100.

March 21: **All Formats Computer Fair.** Donington Park. ☎ 0225 868100.

March 22: **All Formats Computer Fair.** University Sports Centre, Leeds. ☎ 0225 868100.

April 12: **All Formats Computer Fair.** Northumbria Centre, Washington. ☎ 0225 868100.

April 18: **Computer Technology Fair.** The Corn Exchange, Brighton. ☎ 0273 607633.

April 26: **All Formats Computer Fair.** National Motorcycle Musuem, Solihull. ☎ 0225 868100.

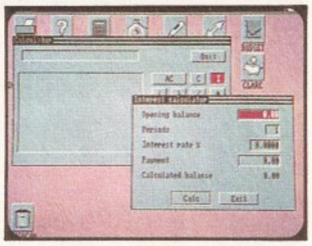
May 15-17: **Amiga Shopper Show.** Wembley, London. ☎ 051 356 5085.

Home Accounts 2

the best gets better...

When Home Accounts was launched four years ago we had just one goal—to create the best home finance program. Over 30,000 of you agreed with us and purchased Home Accounts, not only for use in the home, but also for business, clubs and charities.

It seemed like a good idea to let you tell us exactly what to put into Home Accounts2®



Which you did.

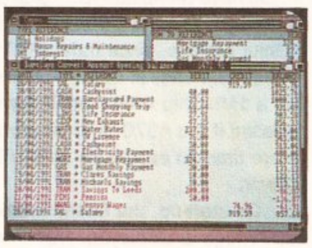
Some of you didn't like the restrictions on the number of income accounts, expenditure types, and transactions. So we removed them.

Some of you wanted more graphics, so we added pie charts, scatter and line graphs. We thought we'd better smarten up the bar graphs, so we added 3D effects, stacking and overlaying, and we made sure you can print them.

Many of you wanted to calculate mortgage rate changes, loan repayments, retirement planning and so on. So we added a pop-up calculator and interest calculator. There's also an option to take account of inflation.

Since nearly half of you use Home Accounts for small business bookkeeping, we added options for VAT and business style reports.

Then, our technical people added a little . . .

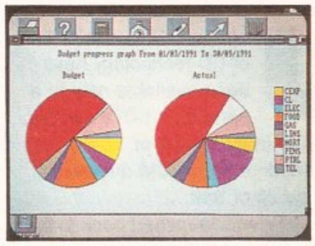


Investment accounts, net worth statement, password, cheque numbering, custom reports, flexible year period. And (to save you disturbing them on our support hotline) an on-line help system, should you need it.

They also added our acclaimed *Human Interface Protocol,*™ which first appeared in Wordworth® As you can see, it sets a new standard in speed, style and elegance for Workbench. (It also contains a screen saver, *Playtime* games and a few other goodies.)

Amiga Format said, "Digita have made great efforts to listen to their customer comments and the result is a package which will suit any household. Everything the home user needs has been included—and more".

Home Accounts2 is written by Digita® Which means you'll be using a program designed for the way British finances work, and you'll know where to come for professional support.

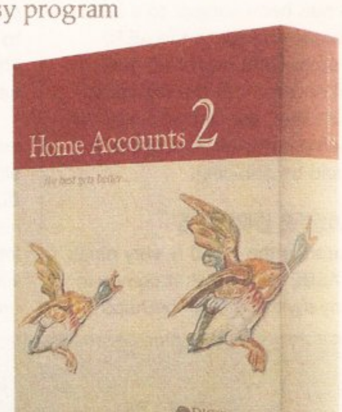


The only way you can really appreciate Home Accounts2 is to use it. Phone 0395 270273 for more information or, write to Digita, FREEPOST, Exmouth EX8 2YZ.

Home Accounts2 costs £54.99, which includes VAT, postage and packing; and when purchased from Digita, comes with a 7 days money-back guarantee.

If you already own a home finance program, for a limited period only, you can trade-up for just £29.99 by returning your original disks to Digita with your order.

Amiga Computing concluded, "A completely functional, very useful and amazingly easy program to use. If you're a wary newcomer to accounts packages then cast off your doubts and splash out on Home Accounts2."



As it turned out, listening to Home Accounts users was a pretty good way to write software.

The best just got better.

Machine support
Written specifically for the Amiga
Fully supports WB1.3 and 2.00
All medium and high resolution modes (mono and colour)

DIGITA® INTERNATIONAL

software thats right™

Home Accounts2 is available to the trade through Columbus, Gem, HB Marketing, IBD, Lazer, Leisuresoft, Precision and SDL.

Digita International Ltd Black Horse House Exmouth EX8 1JL · ENGLAND Tel 0395 270273 Fax 0395 268893

– A member of the Digita group –

Its launch date isn't decided, its price isn't set, even its name is unclear – but it's her

THE KEY TO

When Commodore's new Amiga CD-ROM drive finally arrives later this year, Amiga owners will be offered a brave new whirl of multimedia applications. In this exclusive review of the final prototype, Amiga Shopper takes the lid off the machine everyone has been waiting for...

Until now, the possibilities of CD technology have been available only to a handful of CDTV owners. The imminent launch of Commodore's CD-ROM drive will change all of that...

CDTV was launched back in April 1991. It heralded a new era, providing a multimedia system cheap enough for home use and based on existing Amiga technology. Commodore promised not to leave Amiga owners out: it's been a long time, but CDTV compatibility is finally about to hit the Amiga in a big way.

The device to do this is its CD-ROM drive. Formerly known as the A690, it has been subject to a last minute name change to the A570. The pre-production model we looked at is still badged with the old name. Aside from this, the lack of a manual and bundled software, it is the one that should be shipping.

DESIGNER DRIVES

In appearance the A570 is very much like the A590 hard drive: it comes in a similarly styled, though perhaps smarter, case, and uses another Commodore 'Brick' power supply. Like the A590 it can be expanded to 2Mb of Fast RAM with the addition of a memory card.

At the front is the CD-ROM drive and an eject button. Slightly below this is a headphones socket, a volume knob that doubles up as an on/off switch, and two lights: a power light and a drive activity light.

At the back are the connectors for power and audio. There are two sets of audio sockets: one is connected to the audio-out on the Amiga 500 by a pair of supplied leads, and the other is the combined CD and Amiga audio out to connect to a monitor or stereo amplifier. There is also an expansion slot; the same slot as found on the CDTV.

Currently there are no cards available to the public that use this slot, although developers have had CDTV SCSI cards for quite some time now. One of these can be plugged into the A570's expansion slot without problems, enabling a SCSI drive to be linked up to the Amiga. It does not seem possible to link both the 2Mb expansion memory and the SCSI controller to the A570 together at the moment.



The A570 CD-ROM drive in all its glory. The prototype model we looked at was still badged as an A690. As can be seen, the styling is similar to the A590 hard drive – too bad you can't have both next to each other

Installation of the unit is simple – if you have an A500 Plus – just plug in and go. There's a problem with earlier Amigas, since most CDTV titles need 1Mb of Chip RAM to run. So a 1Mb Chip RAM modification is needed if the A570 is to be anything more than an expensive audio CD player.

On start-up, the flashy rotating CDTV logo is displayed. From now on the Amiga operates as a CDTV, although the floppy drive is still active and normal software can be loaded. Should anything not work with the A570 it can be switched off, returning the Amiga to normal without the need to detach the drive.

THE DIFFERENCE ENGINE

There are differences between the CDTV and the A570 drive. The A570 does not have the CDTV video slot.

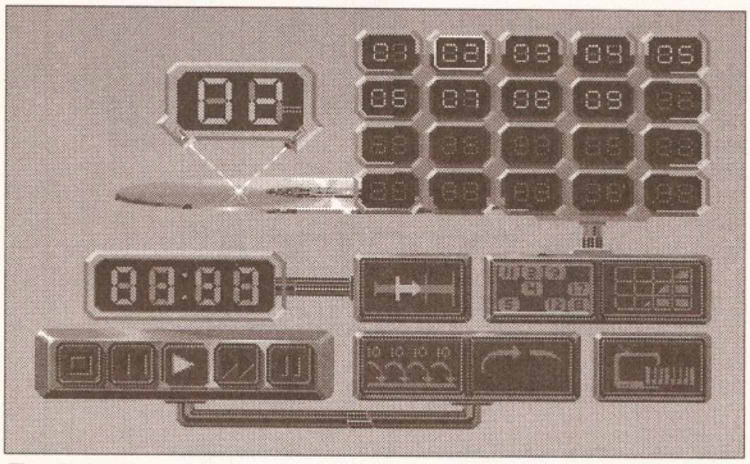
Ch ch ch changes

It's important to remember that what we saw was a pre-production model – the version which goes on sale should be the same, but it may not be. There may well be technical adjustments, possibly even a further name change.

As yet, a price has not been fixed. It is hoped that the A570 will sell for under £300. £299 seems to be a likely figure.

Neither has a release date been confirmed, although we expect it to be out by the end of April or the beginning of May.

Finally, we ask our readers not to phone Commodore asking for a release date – the last thing the people there want is thousands of calls about a product that's not even available yet. We'll keep you posted with details as soon as we get them.



The display that you'll see when playing an audio CD. There are no controls on the drive, so play, fast forward and so on are handled by mouse clicks

Take a trip into the future as we greet Commodore's brand new baby

AMIGA CD

EXCLUSIVE

This slot is for adding the Commodore Advanced Video Mode card, which, using the same technology as in Digital Creations DCTV (see the review on page 35 for details), gives CDTV a pseudo 24-bit graphics capability. It is possible to get around this by adding a DCTV box to the Amiga, but this is less than cost-effective: for the price of a DCTV board you could get a new CDTV and an AVM card.

Another difference is the lack of a RAM card slot on the A570. Not to be confused with a RAM expansion slot, the RAM card slot is used by some of the earlier titles for recording saved game positions. At any rate, the RAM cards are not widely available.

Most importantly, the A570 lacks CDTV's buttons to directly control audio CDs. On the CDTV it is possible to play an audio disc whilst playing a game loaded from floppy; on the A570 this is difficult, if not impossible.

TOMORROW'S WHIRL

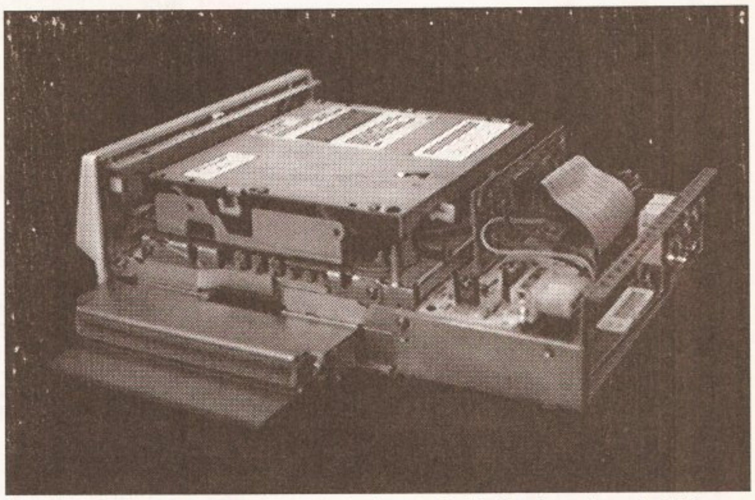
With the A570 drive the Amiga is open to a whole new world of CD media. For a start, it can play standard CD audio discs. The audio quality is quite good. While not quite up to the standard of top of the range dedicated CD Audio players that hi-fi fanatics buy, the Panasonic-built mechanism provides better sound than most of the cheap and cheerful players found in the high street chains.

In addition, the Amiga 500 linked to the A570 drive is one of the few systems in the world that can play the CD+G and CD+MIDI discs. CD+G (Compact Disk Plus Graphics) is a format that combines simple graphics with standard audio discs. There are several Karaoke discs on release already using this format, and Warner New Media has just released a range of classical music using this format.

CD+MIDI is a similar format, except that MIDI information is also included alongside the audio.

The main use of the A570 drive, of course, will be to play CDTV multi-media discs – essentially Amiga programs with up to 550Mb of disc space containing data or audio tracks. The potential of this system is only beginning to be tapped, yet already there are reference works which do far more than the medium of paper ever could: not only can you retrieve information on a subject, you can view digitised pictures of it, watch animations of it, hear related sounds and pieces of music, and search for information connected with it.

Just about every CDTV title works without fault on the A570 drive. There are exceptions. *Music Maker* relies on the numeric keypad having 1-2-3 at the top and 7-8-9 at the bottom, whereas on the Amiga keyboard it's the other way around. An 'A570 compatible' version will soon be available. Other problems were more serious. *The Time Line of History* series would not work on an A500 Plus connected to an A570 drive, although it worked fine with a standard 1.3 Kickstart machine.



And this is it – the very innards of the beast. Sadly, the laser is not visible, but you can be sure it's there, ready to read 550Mb from a single disk

New CDTV titles are all being tested with the A570 drive before dispatch to prevent this type of problem occurring in future.

SHOPPER SEZ YEAH!

The A570 CD-ROM drive is an exciting product that many Amiga owners have been eagerly awaiting. Despite a few minor complaints it is definitely worth getting. If you haven't already got a hard drive you can add one cheaply to the A570. If you have got one then it might be an idea to wait until a model with a through-port is released (which, if there is enough pressure, Commodore will almost certainly have to do).

Although an exact date is yet to be fixed, the A570 should be on the streets by May – look out for it at the *Amiga Shopper Show*. An exact price has so far not been finalised, but it is Commodore's intention to release it at under £300, to which *Amiga Shopper* can only reply 'the price is right'.

TECHNICALLY SPEAKING

Although the A570 is undoubtedly 'a good thing', there are one or two points of concern.

Firstly, owners of standard Amiga 500s will, if they haven't already done so, have to upgrade their machines to 1Mb of Chip RAM (the memory used for graphics and sound). Although the A570 itself doesn't require this, most of the CDTV programs do. Upgrading involves opening the machine, invalidating the warranty, and making some adjustments to the circuit board – Commodore recommends that a dealer carries out the modification. Older machines will also need a Fatter Agnus chip installed to provide 1Mb of Chip RAM, which will cost about £50 plus fitting.

So far as operating system compatibility is concerned, the A570 works with both 1.3 and 2.0 versions of Kickstart. It will not work at all with Kickstart 1.2, but rather presents a challenge to the die-hards to finally upgrade.

Certainly the biggest complaint against the A570 is its lack of a through-port. This means that the A570 cannot be linked to an Amiga 500 if there is already something connected to the expansion bus, in particular a hard disk drive such as the A590 or the GVP Impact II. Commodore claims that there are technical difficulties in adding such a through-port, yet this hasn't stopped several third-party manufacturers from including one with their hard drives.

Those who don't already own a hard drive will suffer no real hardship – a SCSI card will soon be available to plug into the A570 to enable a hard drive to be added cheaply. Others can only hope that Commodore relents and releases an A570 with a throughport.

At present, Amiga 2000, 1500 and 3000 owners can't use it – the A570 will only plug into the side expansion slot of an A500 or A500 Plus. No doubt a version will be released for owners of the more powerful machines but, since something like 90% of existing Amigas are A500s and since CDTV is billed as a home entertainment system, it makes sense for the company to address this market first. In the meantime, owners of larger systems always have the option of buying a CDTV and linking it to the Amiga via the Parnet network.

Talking Shop

Welcome to your letters page. – The only place to be if you're at all serious about your Amiga. If you've got a view then send it to:

Andy Storer, Talking Shop, Amiga Shopper, 30, Monmouth St, Bath, BA1 2BW

You never know, you might win £20!



HP SOURCE

In our wonderful little world of Amiga things start getting a little expensive. What with hard drives vast amounts of memory, printers, scanners, etc.

So why haven't any of the big suppliers come up with a catalogue idea where people can pay for such things on a weekly or monthly basis?

Someone who starts a catalogue would have to start off with a maximum order of, say, £80 – £100 and on the completion of all the payments, up the amount just like the normal catalogues.

I, personally, and I'm sure a few more like me wouldn't mind paying a small percentage more for the ability to pay over 20-40 weeks. To say this isn't viable for a company is rubbish because, before my Amiga, I used to do a lot of fishing as a hobby and there is, in fact, a company in Yorkshire which already does this for fishing tackle and very successfully too.

So think of the extra business that could be created for a company such as Power Computing and others of a similar size. If they were to make the catalogue to cater for all the popular machines, then they wouldn't be limiting themselves to just one machine or creating a catalogue for each individual machine.

D Brandwood
Oldham

Catalogues for computers eh? Not a bad idea that – insofar as there are already such beasts offering everything from sellotape to Scart connectors.

But what you don't find are catalogues offering credit facilities. Why this should be I have no idea. I doubt very much whether it hasn't been considered but can't think of the arguments against it. Surely the first company coming up with such a scheme would clean up?

US SHOPPING

I write with reference to the letter from Geoff Sampher in last month's issue regarding the prices which UK advertisers charge for American Amiga imports.

I have to state first of all that I am in complete agreement with Mr Sampher. The computer users of the UK, in particular Amiga users, although not exclusively so, are being ripped off by suppliers.

As Mr Sampher rightly points out, prices generally are nearly £ for $ equal.

Your reply demands response!

The VAT and Duty are about right although the shipping charge depends on freight weight, not the price.

If a US company ships the goods to an overseas address, then local sales tax is not applicable. Straight away your argument loses some weight.

The UK registered company which imports goods, is just as entitled as the US one to approach the wholesaler or manufacturer of equipment and will therefore receive the trade price – some 10 to 15 per cent less than the price quoted in Amiga World.

I have a very good friend who runs his own computer store in California, so I'm not just guessing here, he is not able to buy in volume, either.

Now let's re-evaluate those costs:

$1399 – 12.5% = $1243.56
$1243.56 /1.75 = £710.61.

(Thus for a $1399 product, KG is saying a UK importer would be paying £710.61 plus freight and duty of 9% and VAT Of 17.5%. This adds up to a figure of £910 – Andy)

Taking your UK figures as a comparison we can see:
£1299 – £910 = £389

Which represents a not insignificant profit margin of 42.8%!

Now you tell me who's being ripped off!! the consumer or your poor advertisers?

To offset the rest of your reply, I have been using equipment from the USA for several years now and I have not had to return any of it.

I may have been lucky, but these days manufacturing tolerances are generally good enough so that failure rates are extremely low, in the order of 2-3%. I know that doesn't help if your bit of kit falls over, but on the other hand it also means you have a 97 - 98% chance of getting a perfect piece of equipment.

Even if you do buy from the UK, if the device fails you still have the hassle of returning it to your supplier, waiting while he, in turn, returns it to his supplier (who may well be in the USA anyway), waiting until it's returned to him and then waiting until he returns it to you. And phone calls in this country aren't cheap either!

I suspect that your response to Mr Sampher's letter may well have been coloured just a little bit, by the value to you of your advertisers!

K G Irving
Chippenham

OK KG, points taken. I can't argue against a 42% mark-up any more than you can. I have to admit it appears I was mis-informed.

But things could be worse I suppose. 50% mark-ups are pretty common in high street consumer electronics stores and in the clothing industry it's a standard 100% minimum.

Like I said last month, yer pays yer money and yer takes yer choice.

continued on page 14

THE BIBLE'S ALWAYS BEEN PUBLIC DOMAIN!

Thank you for including my letter in the technical letter column of your January edition. Thank you too for the advice... I had a problem accessing CD ROM disks.

I tried an early CD player and managed to extract files and was advised to wait for the add-on Amiga A690. I have now purchased a very excellent and speedy GVP hard drive and could naturally fit any SCSI plug to my hard drive.

Would I be able to fit any model of the CD ROM drive to my Amiga 500 now? Or will this prove as incompatible as my old CD Portable Player which downloads files to floppy but does not run them?

I would be grateful for an answer because I find your magazine compulsive reading and extremely instructive.

Rev Michael Reynolds
Holsworthy

Although you now have a SCSI capability this still doesn't solve the problem I'm afraid, since what you now need to find is a CD-ROM driver. As far as I know there aren't any of these out there other than the new dedicated driver for Commodore's A690 CD-ROM drive due out in May.

However there may be a more circuitous solution your problem as the next letter kindly points out...

Regarding the Rev Michael Reynolds' letter about trying to convert the Bible CD files to use on his Amiga.

He might like to know that the entire text of the Bible is available on Atari ST PD disks from the South West software library, P.O.Box 562. Wimborne, Dorset BH2 2YD.

The ST disks can be converted using Messydos to a form which can be read with an Amiga word processor.

Les Johnstone
Glasgow

Could this be the answer to your prayers Reverend?

continued from page 13

GERMAN MARK-DOWNS

I write in support of the opinions so ably expressed by Mr G Sampher in his letter provided by your "couple of importers". After all, to quote a well known phrase 'they would say that, wouldn't they?'

The examples given by Geoff are there for all to see in any issue of the available Amercan computer magazines, but one doesn't have to go so far away to make the point. The German market wil produce similar price iniquities.

As a short example, it is easily possible to buy a top of the range Amiga 3000, with 100Mb hard drive, for about £1,800 at the current rate of exchange. Bearing in mind that one only pays the difference in VAT rates (about 3%) and customs handling charges – a saving of around £400 is made without effort.

I tend to smile at the various advertisements in the computer and camera magazines which issue dire warnings about so called Grey Imports, a phrase that they brandish like some talisman to ward off evil.

If it is possible, and it is, to buy products from abroad at very advantageous prices, and for those selling them to still make a profit, then there is something decidedly wrong somewhere.

Ray Medford
Cheshire

The answer's straightforward enough in any event – if you feel you can get a better deal elsewhere then go ahead. My only advice about buying from abroad is to check that you have adequate come-backs if kit doesn't arrive or goes wrong.

FEEDBACK

Is the GVPA500HD + God?

I think not, although GVP's series 2 A500 hard drive is billed as the most reliable drive on the market. Mine was great for a few hours then it started locking up intermittently. This increased in frequency until the processor halted completely.

The thing that worries me most is that on contacting GVP dealers it became apparent that this fault was fairly common. Not a good sign for a unit which costs a small fortune.

Dave Collins
Southampton

We've not come across this particular fault but perhaps other readers have. Why not let us know? – and if you have any other doubts about hardware you think has been over-hyped by Amiga magazines then let us know at 'Watch it!', *Amiga Shopper*, 30, Monmouth St, Bath BA1 2BW

PEN PAL PLEAS

One omission from your magazine is a 'penpal' page where readers can put their wishes for your correspondence with those users abroad. It is obvious your magazine is read all over the world and perhaps many of those persons would like information on Amiga stuff from England/Europe etc.

Please consider perhaps one page every three months. I am sure other readers would agree it would be worth it. Thanks for a great magazine.

James Abram
Wolverhampton

Consider the considering done!

If you have a need for a pen pal then send your name, address and interests to: 'Amiga Shopper Pen Pals', 30, Monmouth St, Bath BA1 2BW. We'll run it as a free service but please bear with us while we get enough recipients to fill a page. Try and keep your interests to 30 words or so.

And before any of you get any bright ideas about setting up a pirating outfit – and I don't think for one moment that any of you civilised souls would entertain such an abuse of our service – please don't list one of your interests as 'swapping software' – we just won't run anything that smacks of piracy. Public domain and demos are OK – games and applications are most definitely not.

CDTV UPGRADE

Having owned an A500 for a couple of years and with the arrival of the CDTV I thought 'this is it'.

I invested my hard earned cash in the CDTV which I use with 2 disk drives, infra red mouse, Trackerball, keyboard, modem etc.

I think it's a fantastic machine. It runs most of my Amiga software and I plodded away with it quite happily – until Christmas arrived with the A500 Plus.

Workbench 2 has suddenly made my machine 'Old hat'. As a serious Amiga user I am dismayed that I appear to be stuck with Workbench 1.3 on my CDTV. Suddenly everyone is talking 'Workbench 2' and I'm left out in the cold. What I would like to know is this.

What are Commodore intending to do with people like myself who have stuck with them through thick and thin? Will an upgrade be available for the CDTV? Or have I, along with about 8000 others (Commodore's figures for CDTVs sold before Christmas), been sold a dummy?

Gary Howarth
Bolton

As far as I'm aware there will be a helluvan upgrade available for CDTV in the next two years. No less than a new chipset which will bring full motion video to your screen. But I doubt whether you'll ever see Workbench 2 on a CDTV sorry...

HYPING UP TYPOS?

I really felt great when I read that Mark Smiddy had seen the future of education and its name was Commodore Dynamic Total Vision (March 1992 issue on page 21).

I almost jumped for joy when I saw that the CDTV could take the edge on the Sony CD-I thanks to being the first in the market place and offering a much wider range of titles.

But then I abruptly came back to reality. I realized that the CDTV is not taken seriously at all. As anyone can read in the February 1992 issue of *PC Format* on page 17: '...the long awaited (and, if truth must be told, almost mythic) A590 drive, which turns the Amiga into a CDTV, is still distant from the shelves of Dixons, Comet and Currys'. Hum!

Apparently those guys at *PC Format* do not know what they are talking about. I thought it was the A690 and not the A590. Almost mythic?! 'The long awaited A690 CD ROM drive is *now* in the UK and should be shipping by the end of March'! (March 1992 issue on page 11).

To me, this is a clear illustration of the general public contempt for what is not IBM compatible. And I am afraid this way of thinking is going to restrict the CDTV sales to newcomers since they will be told it is an Amiga based product (Amiga fans will buy it for sure!).

On the other hand, the IBM experience has shown that it is not the best products which win, but those with the best support. So I definitely think CDTV can beat CD-I, but Commodore has to produce a wide range of quality programs, and it also has to offer better support, especially in the continental countries.

The CDTV is practically unknown here. How could it then become a best-seller like the good old C64? You can be sure there will be huge advertising campaigns for CD-I, and you will probably be able to buy it in every hi-fi store, whereas the CDTV is only available among Commodore dealers.

How could you 'choose' between CDTV or CD-I when you do not even know the former exists?

Frédéric Deraemaeker
Bruxelles

Knowing the *PC Format* crew I think we can safely say the mistake was a genuine typo. But the rest of your points do make a great deal of sense. CDTV's success or failure rests on profile – and profile costs cash – lots of advertising dosh! AS

IF ONLY I'D REALISED...

THE FIRST IN A SERIES OF HANDY TIPS BRINGING YOU THE BENEFITS OF HINDSIGHT...

£5 WINNER

At present my system comprises of an Amiga 500, Star LC200 printer, external disk drive, GVP hard drive with 3 MB of total memory (only 1/2 meg chip at the moment) and a Philips CM8833 – II monitor.

For some months (ever since buying my hard drive) I have been experiencing an unusual problem, which thankfully I have now solved, but I'm bringing it to your attention in case any other readers have the same problem.

Intermittently, the screen dispay would 'flutter' as if someone was tampering with the vertical and horizontal hold of the moitor simultaneously. Sometimes it would hardly be noticeable,but at other times the movement would be quite severe and very annoying.

At first I thought that I had picked up a virus which had linked on to my hard drive and was therefore always present in my computer after booting up, but after disconnecting the drive I found the flutter was stil there.

Next I tried plugging the Amiga into my portable TV instead of the monitor (aren't monitors *much* better?!) but this time I noticed that the fluttering had stopped, therefore the monitor was to blame,... or was it?

Just before I sent the monitor away for repair I decided to relocate both the Amiga and GVP power supplies under the computer table instead of on top of my external disk drive next to my monitor, and hey presto, the mysterious flutter stopped.

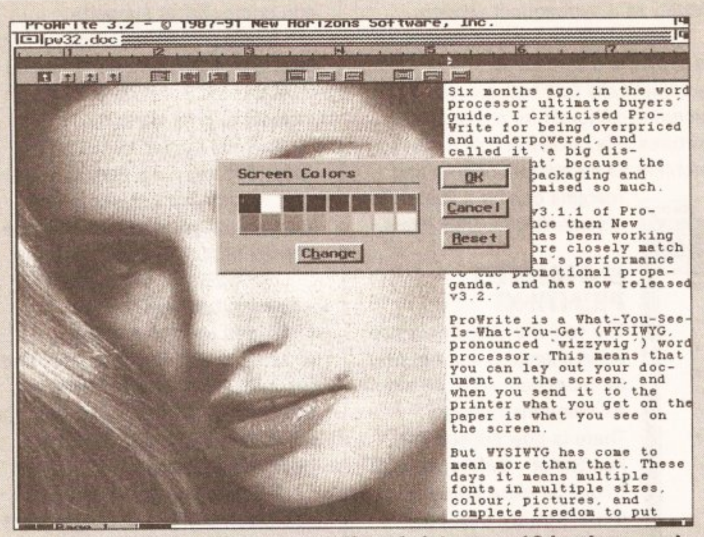
The only answer I can think of is that the magnetic fields created in the power supply tranformers were interfering with the monitor.

Is this true? If so, has anyone else experienced this problem and will it have done any long term damage to the monitor? – it seems to be as good as new now.

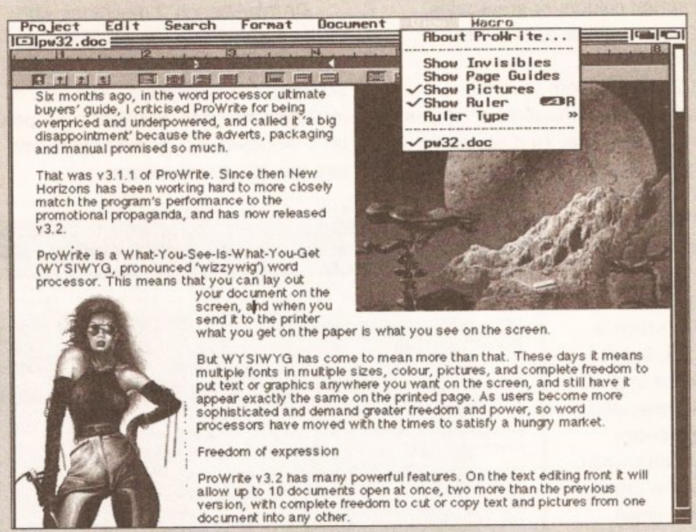
Brian J Wadge
Co Durham

Magnetic fields were indeed the problem, Brian, but don't worry – they won't have caused long term damage. A fiver's on its way to you.

Any other readers with handy tips, no matter how embarrasing, should send them to: " I can laugh about it now", Amiga Shopper, 30, Monmouth St, Bath BA1 2BW



For the best WYSIWYG representation of pictures, a 16 level greyscale works very well



Text and graphics can be mixed on the page, but screen refresh slows down considerably and flowing the text around the pictures is harder work than it should be

What promise lies in the latest release of Prowrite? Jeff Walker gives us the word...

Mark my Words

Six months ago, in the word processor ultimate buyers' guide, I criticised *ProWrite* for being overpriced and underpowered. I called it 'a big disappointment' because the adverts, packaging and manual promised so much.

That was 3.1.1 of *ProWrite*. Since then New Horizons has been working hard to match the program's performance to the promotional propaganda, and has released 3.2.

ProWrite is a What-You-See-Is-What-You-Get (WYSIWYG, 'wizzywig') word processor. This means that you can lay out your document on the screen, and when you send it to the printer what you get on the paper is what you see on the screen.

These days WYSIWYG means multiple fonts in multiple sizes, colour, pictures, and complete freedom to put text or graphics anywhere you want on the screen, and still have it appear exactly the same on the printed page. As users become more sophisticated and demand greater freedom and power, so word processors have moved with the times to satisfy a hungry market.

FREE EXPRESSION

ProWrite 3.2 has many powerful features. On the text editing front you can open up to 10 documents at once, two more than previously, with freedom to cut/copy text and pictures between documents.

Marking blocks, which in some word processors can be a real drag (literally), is made easy in *ProWrite* as special combinations of key presses and mouse clicks can quickly mark a word, sentence, paragraph or the whole document – double-click on a word and it is highlighted as a block; triple-click on a word and the sentence that contains that word is highlighted; to select the paragraph that contains that word, hold down the Alt key and double-click on it, Alt and triple-click to select *all* the text. On top of this you can select any section of text.

For those who don't like taking our hands from the keyboard while editing, there are keyboard equivalents using combinations of Ctrl, Shift, Alt and the arrow keys.

Moving about a document is quick and easy, either by cursor keys or scroll bars. All the expected text editing features are present. Typing text into *ProWrite* is a pleasure, and the easy-to-use block tools help to speed up editing and correcting.

THE NEED FOR PRECISION

Laying out or formatting is more complex. Fine tuning demands precision tools – you need to acquire expertise to get the best from them.

The easy part is choosing your fonts. *ProWrite 3.2* says it can handle more than 32,000 system fonts, a difficult one to check but I've got a few hundred and it gave me access to all of them. Under Workbench 1.3 you are limited to standard Amiga screen fonts, of course, for which you need a bitmap file for each point size you want to use, but with Workbench 2 installed *ProWrite* takes advantage of the new Compugraphic font and automatic re-scaling features, making the fonts system even more flexible.

Plain, Bold, Italic, Underline, Shadow, Subscript and Superscript styles are available, and if you've got a colour printer you can dip into the colour sub-menu and pick text out in Black, Red, Yellow, Green, Cyan, Blue or Magenta. A complete text *style* – a combi-nation of font, style and colour – can be retained and later applied to another passage of text with a single menu selection instead of the three it normally requires.

Each paragraph can have its own format, fixed by position markers on the single ruler across the top of the document window. Like text styles, paragraph formats can be retained and applied to other paragraphs.

The ruler is where indents, outdents and tab positions are specified, including decimal tabs for lining up tables of numbers under the decimal point.

Text can be aligned left, right, centre or flush justified, and line spacing can be set quickly to single, single-and-a-half, double or a point size of your choice. An automatic blank line can be generated before or after a paragraph, or both if you like, saving you the trouble of pressing Return twice between paragraphs.

What it won't do is automatic hyphenation, which is useful for flush justified text, especially if laid out in narrow columns. Rival WYSIWYG packages *Excellence!* and *Wordworth* can hyphenate, albeit only to a very simple set of rules, but this is better than the exceptionally tedious task of having to hyphenate manually.

Page size can be anything from 2in by 2in to 44in by 44in. Margins can be set all round, of course, and headers and footers are catered for nicely – you don't need to specify sizes for them, you edit them and they become as deep as however many lines of text you type into them. Headers and/or footers are on or off for the whole document, except for an initial 'title' page which, if headers and footers are switched on, can be printed without them.

ProWrite caters for facing pages, swapping the left and right margin settings for odd and even pages. You can also specify a 'binding' margin which acts as an automatic and extra left or right margin (on-screen as well as to the printer) depending on whether the page is odd or even if you have selected odd/even pages, or, an extra left margin if odd/even pages is not selected.

Text can be in up to five columns, arranged on-screen with editing freedom, and these can be snaking columns (as in this mag-azine, from the top to the bottom of the page, then back to the top and so on) or side-by-side columns where each paragraph is laid out to the right of the previous one.

BETTER GRAPHICS

ProWrite 3.2 will import any IFF ILBM up to HAM (4,096 colours), and although pictures are displayed in up to 32 colours, the original colour information is retained and used when printing the document.

This is a major improvement on the previous version, which would import up to HAM but print only up to

eight actual colours or greyscales, using built-in dither patterns to simulate the rest.

3.2 retains more than the original colour information, it retains *all* the picture data, so if you scale something small and then make it larger again, the small on-screen image isn't scaled up to produce a blocky bigger picture (which is what 3.1.1 did), rather the original data is re-scaled, giving a better graphic on-screen and to the printer.

One small addition to 3.2 is a blessing – by double clicking on a picture it reverts to its original size, ie when first imported. This is a lot faster than deleting the picture and re-importing it after you've made a pig's ear of scaling it and want to start from scratch.

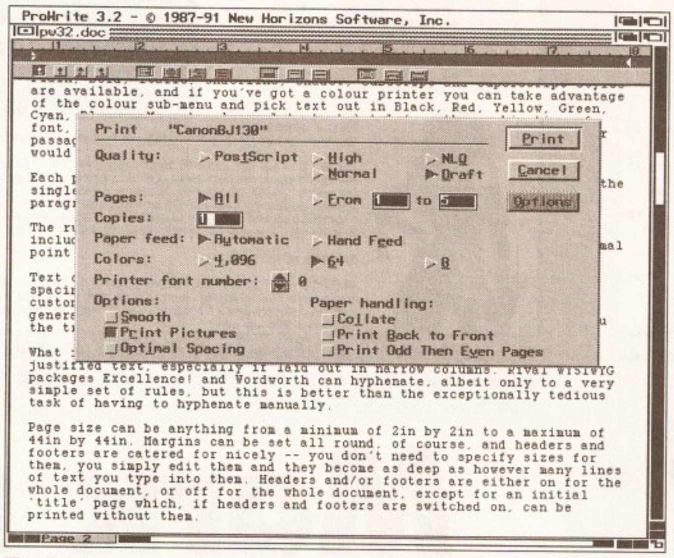
PALETTE PSYCHEDELIA

ProWrite has an internal palette. Although this can be user-configured, it remains fixed and can't automatically adjust to the palette of any particular picture you import. Instead *ProWrite* matches the colours of the picture to its own palette as best it can. This results in psychedelia, but remember that the colours sent to the printer are the original colours, not those seen on-screen.

Although some pictures may look weird, you can almost always see what they are; if not you can play with the palette. As Amiga owners we have to live with these colour restrictions because we don't yet have the technology to give us better colour freedom; *ProWrite*'s compromise sensible. *ProWrite 3.2* has been designed to handle up to 256 colours on-screen from a palette of 4,096. Should future Amiga hardware support more screen colours, word on the grape-vine is that it will, *ProWrite should* be able to take advantage of it.

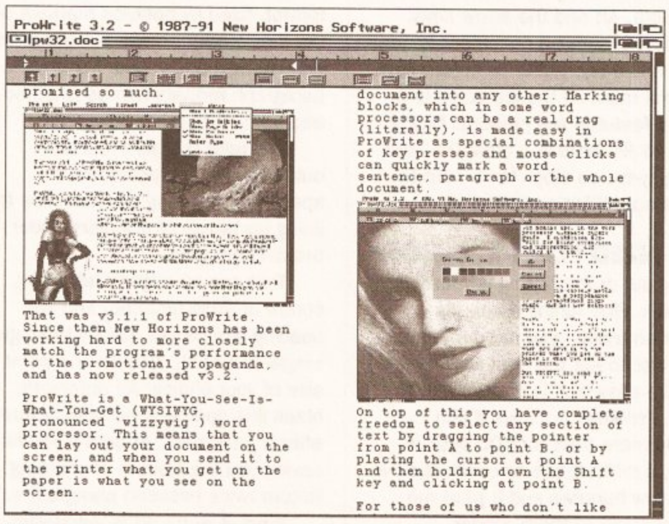
The program can be configured to boot-up in a range of resolutions, using any number of colours up to the maximum allowed by the chosen resolution. On a 1.3 Amiga, HiRes 16 colours is the best visual combination, but screen refresh slows to a crawl unless accelerator hardware is being used; the default MedRes 8 colours is probably the combination, although you might also consider opening *ProWrite* on the Workbench screen to save memory.

On Workbench 2 machines with the enhanced chip set (ECS) you can use the SuperHiRes and Productivity screens, provided you have a VGA or multisync monitor. *ProWrite* can open on a Workbench 2 public screen and use the ASL file requester.



The Print requester contains some advanced features like PostScript output, printer font support, and the choice of how many colours to print – the fewer colours you choose the quicker the printout

Pictures can be scaled as small as you want – right down to a 1/4in square – and as big as the page width and length. Unfortunately *ProWrite* won't let you 'crop' a picture so that only part is visible. Although only a small failing, I can understand New Horizons' reasons for leaving out the facility – it is easy



With just a few mouse clicks a document can be turned into a newsletter with columns and pictures

to cut out the part of the picture you want in an art package, save it as a brush, and import it into *ProWrite* ; not only is the art package more suited to this, but because the brush is smaller than the original picture, it will take up less memory in *ProWrite*.

Nevertheless, cropping is something *Excellence!*, *Pen Pal* and even *KindWords* will allow, and that's as good a reason as any to add the facility to a subsequent version.

Another more serious weakness, is *ProWrite*'s inability to automatically flow text around pictures, although for rectangular pictures this presents only a small problem as paragraph indents and margins can be adjusted to achieve the desired effect.

ENHANCED PRINTING

The way *ProWrite* prints has been changed, and not only for more colours in pictures as mentioned earlier. There is now support for PostScript – before you had to buy an extra package (ProScript) for this. Four PostScript screen fonts are provided – Times, Helvetica, Courier and Symbol – in sizes from 9 to 24 points. Most PostScript printers have other fonts built-in, and to be able to access these you will need the screen fonts and associated '.metric' files.

Where do you get them from? The 3.2 supplementary manual suggests you try the *Professional Page* desktop publishing program. *I* suggest you write to New Horizons and politely ask them why you should spend £200 on a program you probably don't want, simply to get fonts a word processor that supports PostScript should come with anyway.

For dot-matrix printing *ProWrite 3.2* employs a font scaling trick to get higher quality output from Amiga bitmap fonts. It looks at what point size you want to be printed, loads a font twice that size and then scales it down by 50 per cent.

Workbench 2 owners, can take advantage of the Compugraphic font system to get dot-matrix output at the highest resolution your printer and printer driver supports.

Scaling takes memory, so if you have only 1Mb don't be surprised if *ProWrite* decides it hasn't enough memory to print anything.

Internal printer fonts can be used, and there's a gadget in the print requester to select a font number, but you can only use one internal printer font per print run.

ProWrite can now create automatic backups, can be configured to save all open documents at timed intervals, and has a 50,000 word dictionary (as well as the 100,000 word one); there is only one (big) version of the thesaurus, however.

ProWrite is a good word processor, and 3.2 is a significant improvement, but for the professional there's still a lot missing. Automatic contents table and index generation, footnotes, automatic hyphenation, widow/orphan control, and multiple dot-matrix printer fonts in one document – all these are missing, features that other word processors have.

As *ProWrite* is the most expensive of its kind, my opinion is that it can't justify its price until it can do what every other WYSIWYG Amiga word processor can, and more. AS

SHOPPING LIST

ProWrite 3.2 .... £143
by New Horizons Software
☎ 0101 512 329 6215

Distributed in UK by:
HB Marketing, Unit 3
Poyle 14, Newlands Drive
Colnbrook
☎ 0753 686000

CHECKOUT
ProWrite 3.2

Ease of Use ●●●●○
Not difficult to master.

Speed ●●○○○
Slows down badly with on-screen graphics.

Text Handling ●●●○○
Editing is excellent, formatting easy but not as fully-featured as it needs to be.

Graphics Handling ●●●●○
No other Amiga WP does it better, but some do it quicker.

Printer Output ●●●○○
Graphics mode is acceptable, uses printer fonts, supports Postscript.

Documentation ●●●○○
200 pages. OK but nothing brilliant.

Price Value ●●○○○
Expensive considering the features it lacks.

PHOENIX

RAM expansions made for the older A500 will not work with the new A500 Plus if they are populated to more than 512k. Phoenix have developed a range of RAM expansion units specifically for the new A500 Plus.

WHY DO YOU NEED PHOENIX RAM EXPANSIONS?

Phoenix RAM Modules can expand your chip RAM up to 2Mb using the trap door expansion port.

◆

The A500 Plus can only be expanded to 2 Mb of chip RAM using the trap door expansion port.

◆

Chip Ram is required to unleash the full graphics capabilities of the Amiga 500 Plus

◆

Phoenix Ram expansion modules are built to the highest possible standards in the U.K.

◆

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◆

Phoenix 1 Mb RAM modules come in either 512K, 1Mb or unpopulated configurations.

◆

All Phoenix product is backed by a full 2 year replacement guarantee.

TWO YEARS GUARANTEE

EXPAND

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with the

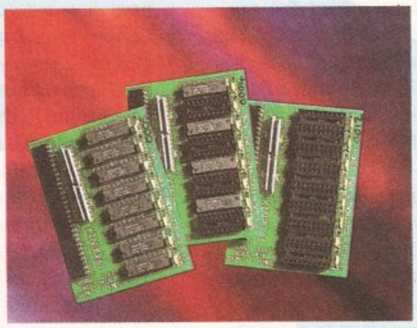
A500 *Plus* 1Mb RAM modules

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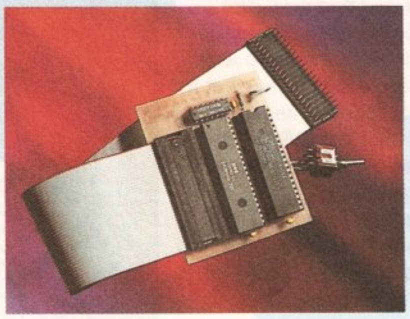
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Power steering

Get more mileage from your Amiga with the power and convenience of a hard drive. Jolyon Ralph takes to the wheel

When you want to get serious with your Amiga, there's only one solution – get yourself a hard drive. But how should you go about choosing one?

HOW DO THEY WORK?

As far as most people are concerned a hard disk is a box which plugs into a computer to magically increase the storage capacity. The mechanisms by which it works are rather interesting.

At the heart of a hard disk are some polished circular metal plates called platters. These are coated with a magnetically sensitive material, which is similar to the material found on audio and video tapes.

Unlike floppy disks the disks in a hard disk are constantly spinning. This is so that the drive is always ready to access data without delay.

A small motor, called an actuator, is connected to a set of arms which moves a read-write head across the surface of each disk at high speed.

> "...about to buy a hard drive? There are plenty of things to check first..."

The heads do not actually touch the disk. There is an invisibly small gap inbetween the rapidly spinning disk (spinning at 3,000 revolutions per minute) and the heads.

There are several heads in hard drives, one above and underneath each platter on the disk. They are all locked into the same actuator so they all move together.

The disk is divided up into areas called sectors. Each sector holds 512 bytes, and these sectors are grouped together into tracks. These are then grouped into cylinders.

If you are about to buy a hard disk there are plenty of things you should check before buying.

A hard drive for the Amiga comprises of two major components which you can be bought separately or in a pre-configured unit.

First is the hard drive mechanism itself. Available in a variety of speeds, capacities and physical sizes, there are only a few manufacturers of these drives worldwide and many different Amiga hard drive units will use the same hard drive mechanisms (for example, Commodore, Supra, GVP, Nexus and others all supply Quantum hard drive mechanisms with their units).

Second is the controller which connects to the hard drive. This is a circuit board which fits on to the edge connector of your Amiga 500, or into one of the slots in your Amiga 1500/2000. (The Amiga 3000 has a built-in SCSI controller so it does not need a separate controller). On the Amiga 500 this controller will come with a case with enough space to fit a 3.5" hard drive. On an Amiga 1500/2000 or 3000 you can fit a hard drive internally, or on to a hard card, where the drive is mounted on to the side of the controller card, fitting inside the Amiga without taking up any of the drive bays. These are then free for other devices, such as floppy disk drives.

Some hard disk controllers come supplied with a hard drive mechanism factory-fitted and installed whereas others come bare for you to add your own drive. Not only is a factory-installed drive easier to set up (as most of the setup work has already been done for you), but it can also be cheaper too, as major suppliers like CBM and GVP benefit from bulk order discounts to the hard drive manufacturers.

Whether you go for an all-in-one package or you pick and mix your hard drive and controller, it pays to look carefully at what is on offer.

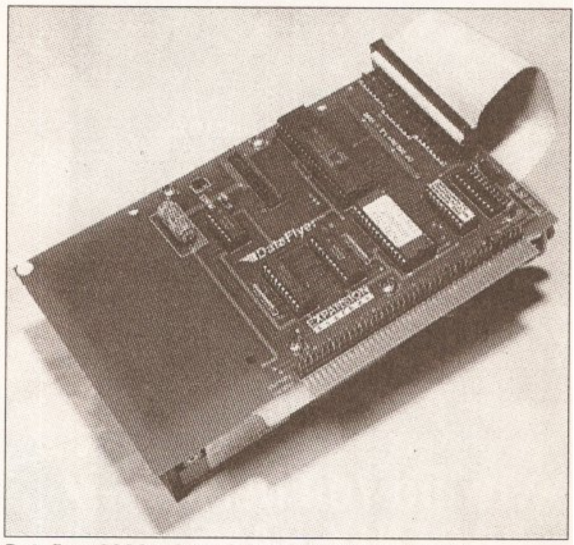
HARD DRIVE MECHANICS

When choosing a drive mechanism there are a few things to check.

Firstly, what capacity do you want? Two years ago the entry-level hard disk for the Amiga was 20Mb. Last year most manufacturers shipped 40Mb as their smallest drive. Now 52Mb drives are the most popular entry-level hard drive and some manufactures have dropped all drives below 100Mb. Remember that hard drive space fills up very quickly. It's much cheaper to buy a 100Mb hard drive to begin with than to buy a 50Mb drive and upgrade later on to 100Mb.

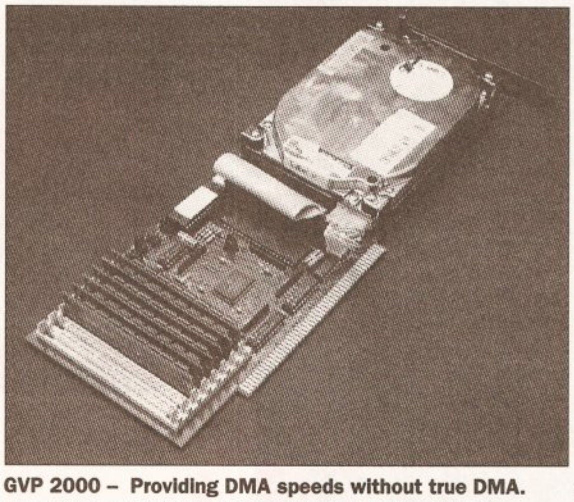
Secondly, what interface do they use? The interface is the type of connector used to link the drive to the hard disk controller. These must match; so, if you have a SCSI controller then you will need to purchase a SCSI hard drive.

Hard drives come with several different interface types...



Dataflyer 2000 – One of the cheapest hard drive controllers about. So, take heed, you get what you pay for: this is quite slow and the setup software not up to much

- **SCSI** – The standard for Amiga use, SCSI (or Small Computer Systems Interface) covers far more than just hard drives. You can use SCSI to link up tapestreamers, CD-ROMs, Scanners and all manner of other devices to your Amiga.



GVP 2000 – Providing DMA speeds without true DMA. The GVP card is well made and priced, making it a favourite choice.

- **ST-506** – Now obsolescent, the ST-506, also called ST-412, MFM or RLL, should be avoided at all costs. You may be able to pick up bargain MFM hard drive for £20-£40, but these drives have very primitive error correction and are awfully complex to set up. It may seem a bargain initially, but they should be avoided.

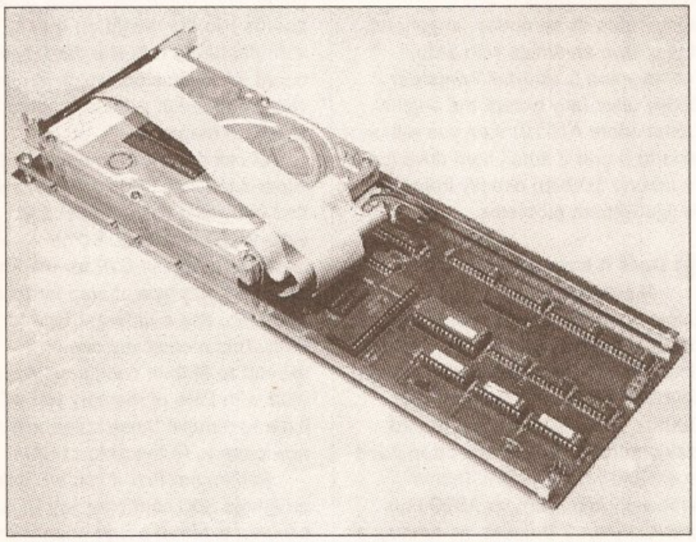
- **XT-IDE** – This is the interface used in the original Commodore A590 drives. Currently there are a lot of people selling old Western Digital and Epson 20Mb hard drives that have been removed from A590s which have been upgraded to newer, and faster SCSI drives. If you are offered one of these drives cheaply, resist the temptation, as the only way you will be able to link one of these up to the Amiga is to buy your own A590, and you can't buy the A590 without a hard disk.

- **AT-IDE** – Different to XT-IDE, this later development is a lot faster and is very popular with PC manufacturers, which now almost exclusively use AT-IDE drives.

Limited to two drives running off one controller, the AT-IDE is not as versatile as SCSI, but drives do tend to be around £20-£30 cheaper than the corresponding SCSI drives.

It has been limited up until now by the lack of any decent Amiga AT-IDE controllers, but there are now several available for both the Amiga 500 and 2000.

for hard drives



Supra 2000 – In the *Amiga Shopper* hard drives trial, back in issue 1, this proved to be one of the fastest drives on the market. It also comes with powerful and easy to use software



Commodore A 590 – despite lacking in RAM expansion, the controller is nigh on perfect. It looks pretty neat too, as the colour and shape are specifically designed to fit your Amiga

Always check that the drive you order is compatible with the interface with which you wish to use it.

Most manufacturers indicate the models with a code-letter in the model number. For example, all Seagate drive model numbers have a suffix determining the interface, N being SCSI, A being AT-IDE, etc. Quantum hard drives end in S for SCSI and AT for AT-IDE.

The third important thing to check with your hard drive is the physical size. Most hard drives are either 3.5" wide or 5.25" wide (the same widths as the two varieties of floppy disk drive, as hard drives are designed to fit into the same bays as floppy drives). Amiga 500 controllers will only fit 3.5" hard drives, and in the Amiga 500/2000 you will only be able to fit 3.5" hard drives, or the half-height 5.25" hard drives.

Manufacturers provide codes to help you identify which models are particular sizes. The first number in a Seagate hard disk code provides the size. 1 and 3 refer to 3.5" drives, but 2 means half height and 4 means full height 5.25" drives, so for example an ST-296N drive is a half-height 5.25" SCSI drive (The remaining value, 96, gives the unformatted capacity, multiply by 0.8 to give an estimate of the useable drive capacity in megabytes, around 80Mb in this case).

Hard disk speed is another important, and generally misunderstood, aspect of hard drives. This is mainly because hard drive manufacturers publish vast amounts of statistics to prove how good their drives are.

You will often see a drive speed shown as an access time in milliseconds (ms). The access time is the average time it takes the drive to move the head from one area of the disk to another. Some drives quote actual access times, some quote effective access times. Most modern SCSI drives contain cache memory. This is 32Kb or 64Kb of memory built on to the drive which stores data read from the disk. When the computer asks to read a particular part of the disk, the controller reads that part in, sends it back to the computer, and carries on reading, storing the next block of data in the 64Kb buffer. If the computer then asks for something that happens to be in the buffer it can be sent back to the computer almost instantly without having to read from the disk. Because of the way hard disks are organised this can make a significant difference to the apparent speed of a disk.

An average access time for a hard disk is around 25ms. Higher values are slower and lower values are faster. Quantum claims its new hard drives have a 9ms effective access time (based on a 64Kb cache and a 17ms real access time).

Far more important than access time, and often ignored, is the data transfer rate. This is the rate at which the hard drive sends data to the computer. Slow MFM hard drives can only send around 200Kb to 300Kb per second. Most modern drives can transfer between 800Kb

BEGINNERS **BEGINNERS START HERE** **BEGINNERS**

What is a hard disk?

A hard disk, or hard drive as it is also called, is a device that stores computer programs for fast, easy access. Using floppy disks can be a pain, programs now come on two or more floppy disks, unless you have several floppy disk drives. This means constantly swapping disks, which will do your floppy drive, disks and your patience no good at all. And if you want to run a paint program, word processor and music program at the same time, you might as well forget it.

A hard disk is like one large floppy disk. Rather than needing several disks to hold one software package, a hard disk can hold many programs at once allowing you to keep your desk free of floppy disks. Hard disks are also faster than floppy disks. *Deluxe Paint III*, for example, which takes almost a minute to load from floppy disk can load in under five seconds from a hard disk, and on a super-fast machine in under one second.

Hard disks come in various sizes, quoted in megabytes. This can get confusing as computer memory is also measured in megabytes, and the two are completely different. Amigas now come fitted with one megabyte of memory. This memory on the computer is temporary storage used directly by the computer to run programs. If you want to run several programs together you will need more memory. Some hard drives for the Amiga (such as the Commodore A590) also allow you to expand your computer memory.

Hard drives alone will not allow you to run more or better programs, the programs themselves will not run any faster. Hard disks are useful because they are far more convenient, and faster, than using floppy disks. For anything other than purely playing games a hard disk is an essential purchase.

If you are intending to buy a hard disk to copy games on to, most commercial games are copy-protected preventing you from copying to your hard drive. Look for games that have a 'hard disk install' option. Electronic Arts and MicroProse software now supply most of their games with such an option and many other publishers are following suit.

With a hard drive connected to your system, and if you have Kickstart version 1.3 or greater, you can 'autoboot' your system from the hard drive. This will allow you to start up and use your computer without using a single floppy disk.

and 1,200Kb per second, and with exceptionally fast drives you can get rates of 2Mb per second or more.

Quantum and Fujitsu both make exceptionally fast drives. Some Seagate models are very fast, but some of their cheaper drives are terribly slow, so check individual model specification.

Transfer rates are also heavily dependent on the controller used. If you use a slow controller you will never get fast transfer rates, whatever drive you attach.

Table 1 shows a list of some popular hard drives used with Amiga controllers and some manufacturers specifications. Manufacturers tend to over-estimate the transfer rates, so never take too much notice of them. For example, Quantum quotes a 2Mb per second transfer rate for their new drives, but in practice they rarely get over 1Mb per second.

HARD DISK CONTROLLERS

The most important thing to check on a hard disk controller, if you are buying your hard disk separately, is that it uses the same interface standard as your drive. If you are buying a new hard drive and controller it is often cheaper to buy them together. Try and go for an SCSI controller if you can afford it, as they offer you the best opportunity for expansion. If you cannot afford SCSI, go for AT-IDE. Don't go for MFM or any other interface standard, it really isn't worth the bother.

Once you have found a controller suitable for your Amiga, there are other things worthy of consideration.

10 ESSENTIAL QUESTIONS

1 Has it room for a drive?
For the Amiga 500 you should buy a drive that can fit a 3.5" hard drive mechanism internally, on the 1500/2000 you need a card that can be used as a 'hard card' (the drive bolted on to the side of the card), unless you are willing to give up a floppy drive bay to store it.

2 Does it have external power?
Not important for Amiga 1500/2000 owners, some Amiga 500 controllers are supplied without an external power supply, taking their power from the Amiga 500. If you have lots of extra peripherals on your A500 this can cause serious problems, leading to unreliable equipment and damage. Some controllers are supplied with Power supply Units (PSUs), sometimes as an option. In general, if you have an Amiga with 1Mb memory and 1 external low-power floppy drive (any except the original Commodore A1010) then you will be able to power a small hard drive (up to around 100Mb) directly from the Amiga without problems.

3 Does it have memory expansion?
Some controllers have sockets for optional memory expansion. Using a hard drive on your system will cut your free memory by around 150-200Kb, which is used by the hard disk controller, so you will often need to expand your memory. This is especially important for A500 Plus and Kickstart 2.0 users, as running a hard drive on a 1Mb Kickstart 2.0 system leaves very little memory free, and most applications will fail from memory shortage.

One thing to beware of is that some controllers have optional memory boards rather than memory sockets. Memory sockets allow you to plug in industry-standard memory chips. With controllers using optional boards you are reliant on the manufacturers non-standard memory board for expansion, which is often vastly inflated in price compared to standard memory.

Check how much memory it can expand to (2Mb, 4Mb or 8Mb) and find out which chips it needs to expand to each level. Some controllers, eg the GVP for the Amiga 500, use one type of chip for 2Mb and 4Mb, and a different type for 8Mb. This means you can only expand to 8Mb in one jump. If you start with 2Mb of memory you will have to remove these chips and add new ones to fit the 8Mb of RAM.

Remember that if you are using an Amiga 500 controller you *must* have an external power supply for the controller if you intend to fit any expansion RAM, as the Amiga 500's power supply just isn't up to the job of powering an Amiga 500, a hard drive and all that expansion memory.

4 Is there an external SCSI port?
If you intend to expand your machine later with larger hard disks, CD-ROMs or tapestreamers you will need a controller with an external SCSI port. This is a 25-way connector which is identical in shape to the connector for the Amiga parallel port, although don't get these two mixed up: if you plug a hard drive into your parallel port, or a printer into your SCSI port, you will wreck your hardware!

As an external SCSI port adds little more than 50 pence to the cost of a controller card most now come with one fitted as standard.

5 Does it have a through port?
If you already have an Amiga 500 add-on plugged into your expansion port you may be unwilling to give this up to plug in a hard drive.

Most Amiga 500 hard drives do not have a through port to allow you to connect both at the same time. The Supra 500XP hard drive for the Amiga 500 does have a through port, but beware, some extra hardware devices for the A500 (notably Datel's Action Replay cartridges) do not work well at all with any hard drive.

6 Does it have a fan?
Amiga 500 hard drive cases can get very hot, especially if RAM is fitted internally. To solve this, most hard drive controllers have a fan fitted internally. This prevents the components from overheating and malfunctioning. If you want to expand memory, insist on an internal fan.

Table 1: HEAD TO HEAD: HOW DO THE HARD DRIVES COMPARE?

Drive	Type	Capacity	Size	Access Time	Transfer Rate	Cache
	SEAGATE:					
ST-138N	SCSI	32.2Mb	3.5"	28ms	up to 1.5Mb/sec	2Kb
ST-157N	SCSI	48.6Mb	3.5"	28ms	up to 1.5Mb/sec	2Kb
ST-157A	AT-IDE	44.7Mb	3.5"	28ms	up to 4Mb/sec	2Kb
ST-277N	SCSI	64.9Mb	5.25"	28ms	up to 1.5Mb/sec	2Kb
ST-1096N	SCSI	83.9Mb	3.5"	20ms	1.5Mb/sec	2Kb
ST-296N	SCSI	84.9Mb	5.25"	28ms	1.5Mb/sec	8Kb
ST-1102A	AT-IDE	89.1Mb	3.5"	19ms	4Mb/sec	8Kb
ST-1126N	SCSI	107Mb	3.5"	15ms	1.25Mb/sec	64Kb
ST-1162N	SCSI	137.5Mb	3.5"	15ms	1.25Mb/sec	64Kb
ST-1201N	SCSI	171.9Mb	3.5"	15ms	3.0Mb/sec	64Kb
ST-1239N	SCSI	204.2Mb	3.5"	15ms	3.0Mb/sec	64Kb
	QUANTUM:					
P40S*	SCSI	40Mb	3.5"	19ms	1.8Mb/sec	64Kb
52S/LP	SCSI	52Mb	3.5"	17ms	2Mb/sec	64Kb
52AT/LP	AT-IDE	52Mb	3.5"	17ms	2Mb/sec	64Kb
P80S*	SCSI	80Mb	3.5"	19ms	1.8Mb/sec	64Kb
105S/LP	SCSI	105Mb	3.5"	17ms	2Mb/sec	64Kb
105AT/LP	AT-IDE	105Mb	3.5"	17ms	2Mb/sec	64Kb
210S*	SCSI	210Mb	3.5"	15ms	2Mb/sec	64Kb
240S/LP	SCSI	240Mb	3.5"	15ms	2Mb/sec	64Kb
	FUJITSU:					
M2613ESA	SCSI	135Mb	3.5"	19ms	3Mb/sec	32Kb
M2613ET	AT-IDE	135Mb	3.5"	19ms	1.5Mb/sec	32Kb
M2614ESA	SCSI	180Mb	3.5"	19ms	3Mb/sec	32Kb
M2614ET	AT-IDE	180Mb	3.5"	19ms	1.5Mb/sec	32Kb
M2616ESA	SCSI	105Mb	3.5"	20ms	3Mb/sec	32Kb
M2616ET	AT-IDE	105Mb	3.5"	20ms	1.25Mb/sec	32Kb

* These drives have been discontinued, although some suppliers may still have stocks.

❼ Does it have a disable switch?
Some programs, particularly badly-written games, will not work with a hard drive attached. To solve this some manufacturers have designed their controllers with disable switches (or game switches) to allow you to turn off the drive when not required. The fan and the drive will usually stay running, so don't expect it to make the drive any quieter.

❽ Is it Rigid-Disk-Block compatible?
When Commodore was designing its new hard disk controllers for the Amiga 500 and 2000, it published a proposal for a common standard for all hard drive manufacturers to follow which would allow compatibility across controllers. What this means is that if you buy a Commodore A590, plug a hard drive into the back of it and format it, copy programs on to it, and take this and put it on to the back of another controller which follows CBM's RDB standard (eg the GVP Series II controller), it will read the drive and its data without needing to reformat the drive. Other controllers (eg the Dataflyer) do things their own way, and are therefore incompatible.

This may not seem important now, but, if in future, you wish to add a removable drive (such as the Syquest), you are limited to swapping cartridges with people with the same controller as yourself, and if you upgrade your controller you will have to reformat all your disks.

❾ Does it use DMA transfer?
There are two ways a hard disk controller can transfer data into your computer memory. The first is to use DMA (Direct Memory Access). This involves a custom chip transferring data directly to your computer's memory, without involving the processor inside your machine at all.

The second is to use non-DMA transfer, which requires the 68000 processor in your machine. Although there is no real speed difference now between DMA and non-DMA controllers (in fact some non-DMA controllers claim higher speeds than DMA controllers), non-DMA controllers slow down your machine as they use the 68000 CPU to do their dirty work for them.

On the other hand, some accelerator boards (eg: the SSL A5000) do not work at all well with DMA controllers. This is because the DMA circuitry on a standard DMA controller only knows about memory that is in the standard Amiga memory map, and some boards have 32-bit memory in high areas not normally accessible by the Amiga. Older DMA boards also had problems under certain graphic modes on the Amiga, this has been resolved on the newer generation of DMA controllers.

If you have not yet bought an accelerator board, try and avoid boards which have these problems (SSL A5000/B5000 and CSA Mega Midget Racers) and stick to accelerators which do not have this problem (Microbotics VXL-3000 and Commodore accelerators).

Another solution is to buy an accelerator board with on-board SCSI controller. The GVP Combo boards are excellent examples, offering 32-bit memory and a DMA controller capable of accessing all this memory (as it is a 32-bit DMA controller which is aware of this extra memory).

❿ Can it be internally expanded?
Not satisfied that a through port would be a sensible way of allowing the hard drive interface to be expanded, GVP, in its hard drive interface for the Amiga 500 added a mini-slot for future expansion. They have already launched a PC emulator (a version of the popular AT-Once card) that can be added into the drive without invalidating the warranty. Future plans include a 68030 accelerator board to fit inside the GVP controller case.

Table 2: HOW THE HARD DRIVE CONTROLLERS COMPARE

Amiga 500 using external through-port

	Type	PSU	Fan	RDB	Port	SCSI	Memory	DMA	Drive	RRP
Dataflyer 500	SCSI	*	No	No	No	*	*2	No	None	£129
Dataflyer 500	AT-IDE	*	No	No	No	*	*2	No	None	£119
Supra 500XP	SCSI	*	Yes	*3	Yes	Yes	to 8Mb	No	None	£219
Commodore A590	SCSI	Yes	Yes	Yes	No	Yes	to 2Mb	Yes	20Mb SCSI	£299
GVP Impact/52	SCSI	Yes	Yes	Yes	No	Yes	to 8Mb	No	Quantum 52Mb	£399
GVP Impact/105	SCSI	Yes	Yes	Yes	No	Yes	to 8Mb	No	Quantum 105Mb	£599

* – Available as an optional extra
*2 – Only with expansion memory board fitted at extra cost
*3 – Supra supports Rigid Disk Block, but gets volume and device names the wrong way around, so it is not 100% compatible.

Amiga 1500/2000

	Type	RDB	Memory	DMA	Card	Drive	RRP
Dataflyer 2000	*4	No	None	No	Yes	None	£90
Supra Wordsync	SCSI	*5	None	No	Yes	None	£99
ICD AdSCSI 2000	SCSI	Yes	None	No	Yes	None	£99
Commodore A2091/2094	SCSI	Yes	to 2Mb	Yes	Yes	Quantum P40S/52LPS	£399
GVP Series II	SCSI	Yes	to 8Mb	No	Yes	None	£169
GVP Series II/52Mb	SCSI	Yes	to 8Mb	No	Yes	Quantum 52Mb	£299
GVP Series II/105Mb	SCSI	Yes	to 8Mb	No	Yes	Quantum 105Mb	£499
Nexus SCSI	SCSI	Yes	to 8Mb	No	Yes	None	£199
Nexus SCSI/52Mb	SCSI	Yes	to 8Mb	No	Yes	Quantum 52Mb	£399
Nexus SCSI/105Mb	SCSI	Yes	to 8Mb	No	Yes	Quantum 105Mb	£599
GVP 22Mhz Combo	SCSI	Yes	to 13Mb	Yes	*	None	£599
GVP 33Mhz Combo	SCSI	Yes	to 16Mb	Yes	*	None	£999

* – Optional extra
*4 – Available in SCSI or IDE versions
*5 – supports Rigid Disk Block, but gets volume and device names the wrong way around, so it is not 100% compatible.

SETTING UP YOUR HARD DRIVE

Once you have purchased your hard drive you should set it up. If you purchased a drive *and* controller from a supplier he should pre-install it for you. Make sure you tell him which version of Kickstart you have, as he will have to install that version of Workbench on the drive for you.

If you have to install the drive yourself there are several steps...

● 1 Connecting together
There are two cables connecting the drive to the controller. One has four leads, this is the drive power cable, and can only fit one way around. The other cable is a 50-way (40-way for AT-IDE) data cable. One edge of the cable will be red or black, this corresponds to pin 1 on the connector. Line this up with a small triangle mark, or a number 1, on the drive and interface connectors.

If there is no obvious numbering on the drive connector, pin 1 is usually on the side next to the power connector.

Plug everything together, screw everything down that needs to be, and turn on the power.

● 2 Run utility software
Assuming your machine hasn't disappeared in a cloud of blue-grey smoke at this point you are ready to proceed with installing your disk. Boot the utility disk which came with your controller and run the setup software.

● 3 Manual or Automatic
Some software has an automatic installation procedure, the GVP software for instance, choose this and stand back. Follow these instructions and you can set up your controller without any further hassle.

● 4 Manual setup
Firstly, the software will allow you to low-level format your drive. *Never do this.* SCSI and AT-IDE drives do not require low-level formatting, and it may damage some drives. Skip straight past that to the configure drive section. This will read data from your drive to determine exactly what sort of drive it is. Again, check that the figures (particularly the estimate of the size of the disk) make sense; if they don't, you may have a faulty drive.

Once you have set the drive type you need to set up your partitions.

A partition is an area of a physical device (a hard drive unit) set up as an Amiga device. You can have several partitions on one drive (eg, a 105Mb drive split into two partitions, DH0: and DH1:). More partitions can make using the drive easier, although, adding partitions eats up your RAM, as a certain amount of RAM is needed by each partition when the hard drive is active.

Once the partitions are set up you can quit the program and format the partitions. Open a CLI or Shell and type:

```
FORMAT drive <device name> ↲
name <your volume name> quick
```

Then, all that is left to do is copy your Workbench disk on to the drive, place the disk in DF0: and type:

```
COPY df0: <device name> all
```

which will copy your Workbench on to the hard drive. Reboot and your hard drive should be running.

HOW TO LOOK AFTER YOUR HARD DRIVE

Always keep backups of important files! I cannot over-estimate how important this is. There are disk recovery programs (such as *DiskSalv* in the public domain and the commercial *Quarterback Tools*), but these programs do not and cannot guarantee 100% success.

Most modern hard drives autopark, so unless you are using a really old drive you won't need to worry about this.

If something does go wrong, first try and back up whatever data you can from the drive. If you can, get everything important from the drive, reformat the drive and start again. If not, you should try using a utility like *DiskSalv* or *Quarterback Tools* to regain lost files.

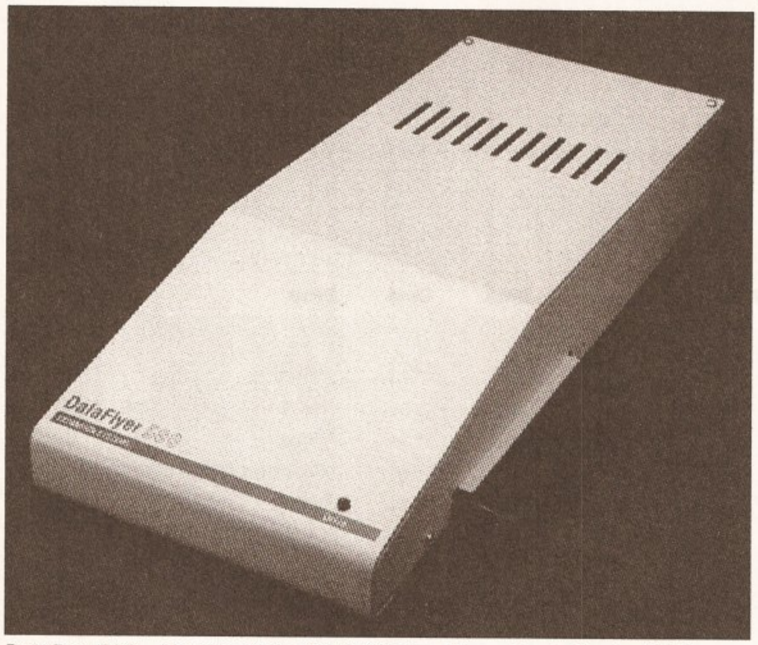
FUTURE EXPANSION

With an SCSI controller there are plenty of expansion options available. Firstly, external hard drives, up to 1.6Gb (or 1600Mb) in capacity can be plugged in, up to six devices can be chained to the back of an SCSI controller, giving a total of nearly 10 Gigabytes storage!

Removable media are popular now, the most popular being the Syquest 44Mb cartridge, this writes to 44Mb cartridges which can be interchanged with other machines.

You can also add tapestreamers, CD-ROM units, Magneto optical drives and the new generation of 3.5" 20Mb floppy disks drives.

Whatever you decide, with a hard drive you'll find your Amiga has potential you never dreamed of. AS



Dataflyer 500 – Not one of the *Amiga Shopper* favourites in the hard drive trial. Judged to be a bit tacky all round despite a promising external finish

So, which is the one for you?

Table 2 gives a brief outline of the capabilities of the most popular controllers and factory-configured drive combinations available at the moment, but here is some more in-depth information on each model:

Dataflyer

Available for the Amiga 500 (with external case) and 1500/2000, this is currently the cheapest controller available, and unfortunately it shows. It is fairly slow, it does not support Rigid Disk Block, and it has abysmal setup software. However, it is cheap and it works, and because it uses a non-standard formatting system it actually boots up rather quickly. Only for those on a really tight budget who do not need to expand, because adding on the cost of a power supply, memory board and SCSI port brings up the price to the same as the better drives.

Supra

Supra produces two products, the Supra 500XP for the Amiga 500 and the Supra Wordsync card for the Amiga 1500/2000. Apart from a minor problem with the Rigid Disk Block implementation (If you format a drive called DH0: and give it a volume name of Fred on another controller, the Supra will think it is a device called Fred: with a name DH0). This is quite a nice controller. The Amiga 2000 version is now outclassed by better devices like the GVP Series II card. The Amiga 500 version is the only controller which has a through port.

Commodore

Commodore produces the Amiga A590 hard disk, still only supplied with a minuscule 20Mb mechanism. The actual controller is almost perfect. It uses DMA transfer, yet doesn't suffer from the DMA hassles which gave Commodore's earlier controllers (the A2090 and A2090A) such a bad name. It only takes 2Mb of RAM internally, if this controller was upgraded to take 8Mb RAM and fitted as standard with 52Mb or 105Mb drives, it would beat the competition hands-down. The A2091 card for the Amiga 2000 is an excellent card, again it suffers from lack of ram expansion, but it is well made and performs well. Definitely recommended, if it came with more choices of drives and up to 8Mb expansion it would be my favourite.

Nexus

Billed as the fastest Amiga 1500/2000 controller I was a little disappointed with the Nexus. Although it gave a very impressive throughput both with a standard machine and an accelerated machine, the non-DMA transfer caused a noticeable drop in computer performance. The card did not seem reliable either, tests with a tapestreamer showed frequent drop-outs and data errors. Overpriced in comparison to the GVP controller.

ICD

A nice cheap card for the Amiga 1500/2000, it is cheap, although it doesn't have DMA transfer or on-board memory. A better option than either the Dataflyer or the Supra for the Amiga 1500/2000.

GVP

My personal favourite, despite the lack of true DMA support. It has a pseudo-DMA transfer system which uses on-board DMA to read from the drive into an on-board data cache, which the processor then accesses. This provides DMA speeds without using true DMA (therefore upsetting certain accelerator boards), and the processor performance degradation is minimal. The cards are well made and aggressively priced now, at £299 RRP for a GVP A1500/2000 card with a 52Mb hard drive it is cheaper than the trade price of the two components separately, plus it is all set up ready to go.

Both versions expand up to 8Mb of RAM, but beware, on the Amiga 500 version you will need to use expensive 4Mbx8 Simms to expand to 8Mb, on the Amiga 1500/2000 version you can use eight of the much cheaper 1Mbx8 Simms.

If you have an Amiga 1500/2000 then an even better option is the GVP Combo accelerator board which has a built in SCSI interface, which is a true DMA transfer.

AMIGA ANSWERS SPECIAL

HARD DRIVES

Problems with your hard drive? Don't know the difference between a prep and a park? Read on, and find the solutions in our Amiga Answers special...

COLD-BOOT SHY

My Amiga with A590 attached won't autoboot from cold. The system request 'Not a DOS disk in Unit 0' appears. It is an intermittent fault which only happens on the first boot-up from cold. Low-level formatting the disk had no effect.

The A590 may not be the culprit. This problem can be caused by a faulty external drive which is overloading the electronics controlling df0: and foxing the Amiga into thinking it contains a disk. If you have any external drives try switching off, disconnecting them and switching on again.

The other possibility is that the drive is not validating correctly when switched on. There are two main cures for this symptom.

- Always PARK the hard drive before switching off and get into the habit.
- Before switching off, make sure all disk activity has stopped. Watch the green busy light. When it goes out, wait at least a second, run PARK and switch off at the Amiga's PSU immediately.

DRIVE SWITCH-OFF

When my A500 is in use for game-playing it would be nice to disable the A590 drive. Unplugging it will cause wear and tear, so I would like to be able to fit switches to disable the drive and fan mechanism and yet retain any RAM in the drive.

I need to know which leads or contacts need to be switched. I could extend the wires out of the drive or fit an interface between computer and drive with switch/es on top.

One of the reasons for having the fan is to cool the chips – so, although possible, it would not be wise to disable it. Try replacing the hard drive with a 40Mb low-power consumption model and removing the fan.

HARD DISK CHOICES

I plan to buy a hard drive for my A500. I am considering the Xetec Fastrack but in the hard drive trial in *AS* 1 you said it proved too tricky to get running. How tricky?

Also, does the GVP Impact II+ have a through port?

The Xetec machine is tricky to get up and running no matter how much technical nouse you have. Once going it is no better than average, and no longer lives up to the claims made for it. The GVP Impact II+ drive is faster, better made and a better unit all round. It does not have a through port – and, judging from my experience of such things, behaves better for the lack of it.

JERKY GAMES

I own an A500 with Kickstart 1.3. It is fitted with an A501 RAM expansion. How I can add more memory? I play a lot of games, but they tend to be a bit on the jerky side. If I bought a hard disk drive, such as a GVP or an A590, would this make the games run better?

If fitted, would this affect the warranty on my machine, and could the A501 RAM expansion still be used or would I have to remove it?

A hard disk drive would not improve the graphics on your games. A hard disk is like a floppy disk, but bigger and faster. It means that sections of a game can be loaded into your computer more quickly and that you won't have to do any disk swapping. But it won't change the speed at which your computer displays the graphics or plays the game. This requires an accelerator card.

Fitting an external hard disk would not invalidate your warranty. Most drives connect to the Amiga's expansion slot at the side, leaving the trapdoor free for your A501 RAM expansion. If you want more than 1Mb of RAM, this must be added to the same slot as the hard drive. Most drives have space on their circuit board for RAM chips – for example, the A590 has space for up to 2Mb, and the GVP Impact II+ has space for a whole 8Mb.

THROUGH-PORT QUERY

I have an A500 with 1Mb, an extra drive and Datel's Action Replay II cartridge. If I plugged a hard disk into my expansion port, would I still be able to use my Action Replay II? I know that some hard disks have an SCSI port. What is this? Are there any hard disks which have a through port I can plug my Action Replay into?

Normally, you would not be able to plug your cartridge in after a hard disk was fitted, unless, as you say, you bought a hard disk with a through port. The 40Mb Supra 500XP is one such drive. Alternatively, the 20Mb Novia 20i hard disk will fit inside your Amiga and leave your expansion slot free.

An SCSI (Small Computer Systems Interface) port is an industry standard connector which enables several hard drives to be connected. It is not the same as the Amiga's expansion port.

HARD DRIVE HARD TIMES

I bought a second hand GVP Impact 500. I put in a Miniscribe 20Mb drive and it worked fine. The trouble is that when I add 2Mb of memory in the sockets provided it seems to clash with the internal memory, a 1.5Mb expansion board.

I have put the drive on a bog standard A500 and the same fault appears. I have changed the power supply to the hard drive but the fault

JARGON BUSTING • JARGON BUSTING

FFS – Fast Filing System. A new filing system driver introduced with Workbench 1.3. Disk blocks are arranged so large amounts of data can be read quickly. Reads and writes are speeded up by up to seven times. Directory searching is around 10 times faster and the hard disk partition limit is raised to two Gigabytes. Some older hard disk systems cannot boot with FFS. Also, it is not available with floppy disks under AmigaDOS 1.3, making them slooooow.

HAM – Hold-and-Modify – The Amiga's special screen mode which enables it to display 4096 colours at once.

High-level format – An AmigaDOS format. Prepares the drive for use with AmigaDOS by formatting it with OFS or FFS.

Low-level format – Hard drives are weird beasties and this initial formatting is done by the drive controller, usually only once when the drive is first configured. Primarily this format controls things like interleave factors.

OFS – The old filing system dating back to the days of the first Amigas. It works, but is not suitable for the improved speeds and storage capacities available with hard disks.

Partition – Part of the drive separated from the rest. As far as Workbench, AmigaDOS and the rest of the world is concerned, a partition is a disk in its own right. Problems do come to the fore when you try to copy data between two partitions on the same drive.

Prep – Tells the drive what size it is, the interleave factor, filing system type, where the bad blocks lie and so on. This sort of information is only useful to advanced users squeezing more speed from a drive.

persists. The memory chips have been changed without result.

If your memory fails to work on a bog-standard Amiga 500 and you've changed the RAM and the PSU, then I'd have to say that your GVP Impact 500 unit is faulty. The circuitry that handles the SCSI drive and the circuitry that handles the memory are mostly separate, so it is quite conceivable that the SCSI drive will work fine, but the memory fails.

CHAINING HARD DRIVES

Could you tell me how to daisychain two A590 hard drives together? The thing that has stumped me is the software side of things. What changes do I have to make, using the setup disk, as at the moment the system will not recognise either of the drives. When I switch the computer on, the system seems to read each drive in turn, but nothing much happens after that.

Your problem is a hardware one, not a software one. Firstly, you should only use one XT connector on the board. The space for the other connector and the other power lead are not spare for people to solder on to, but depend on which drive is supplied with the A590. With the Western Digital 20Mb drive, the XT connector is on the right and the power connector is on the left. The Epson 20Mb drive supplied with early A590s is the opposite way around. This is the only reason that the board has two possible connections for power and XT drive.

To run a second XT drive you have to make a 40-way ribbon cable with three 40-way connectors on it, plugging one end into the A590 XT connector and the other two into the two XT drives. You then have to change the jumpers on the XT drives so that one is set to master mode and the other to slave. This will depend on which drives you have.

You will then have to find an external power source for the other XT drive, as the A590 only provides enough power for one drive.

USING A MAC HARD DISK

Can I use a 20Mb Macintosh hard drive with my 1Mb Amiga 500? Will there be problems with autobooting and software compatibility?

Macintosh drives use the standard SCSI interface, so you can connect it. You will need to purchase a hard drive interface for your Amiga 500. The cheapest interface you can use is the Dataflyer, but any SCSI interface for the Amiga will work. As long as you are using Kickstart 1.3 you will have no problems with autobooting. You shouldn't have any special problems with software compatibility either. Some software will refuse to work with any hard disk, but that's because the software was badly written and isn't the fault of your new hardware.

PARTITIONING DRIVES

I have a B2000 and a Quantum 100Mb hard drive with a Commodore A2091 controller. According to the A2901 manual, I can have more than one bootable partition, so how do I switch from loading one partition to another during startup? I want Workbench and business packages on one partition and Nico Francois' program selector menu system on another, so I can use iconless utilities without fiddling around with the CLI.

Also, how do I get PD disks which are not Workbench-compatible on to my hard drive so I can load and boot them at will? Some PD disks have disk icons, but no other icons. What is the best way of putting them on my hard drive? Are there any books on hard drives and the A2091 for beginners?

In practice you cannot have more than one bootable partition active at the same time, because the highest priority partition will take over the boot sequence. For instance, if you have a boot disk in DF0: and boot the machine, it starts from the floppy not the hard disk.

What you need to do is hand control from the boot partition to a second partition during startup, and this is easily achieved with a few lines of AmigaDOS code. What you put in there depends on how you have set up your machine.

Here's a typical example of a startup-sequence which hands control over to a second partition:

```
Addbuffers df0: 10
SetPatch >NIL:
Sys:System/FastMemFirst
echo "A2091 Boot transfer ↵
disk.*n"
ask "Press Y <Return> to get↵
Workbench or <Return> for ↵
Selector"
if warn
   assign s: DH1:S
   ; Move scripts to DH1
   assign c: DH1:C
   ; move commands to DH1
   assign l: DH1:L
   ; move handlers to DH1
   assign libs: DH1:LIBS
   ; move libraries to DH1
   assign devs: DH1:DEVS
   ; move devices to DH1
   assign fonts: DH1:FONTS
   ; move fonts to DH1
   assign sys: DH1:
   ; move root to DH1
   echo "Booting from DH1:"
   echo >RAM:delme ↵
"Workbench"
   ; set a temporary flag
endif
BindDrivers
Setclock Load
FF >NIL: -0
resident CLI L:Shell-Seg ↵
SYSTEM pure add
resident c:Execute pure
resident c:Resident pure
resident c:CD pure
makedir ram:t
makedir ram:env
makedir ram:clipboards
assign T: ram:t
assign ENV: ram:env
assign CLIPS: ram:clipboards
mount newcon:
mount speak:
mount aux:
mount pipe:
Sys:System/SetMap gb
path ram: c: sys:utilities ↵
sys:system s: sys:prefs add
if exists RAM:delme
   LoadWB delay
   ; If required, start ↵
Workbench
else
   run Selector
   ; Start selector here
endif
endcli >NIL:
```

This approach suffers from a few problems – not the least of which is that you have to decide which partition to boot from every time you start the machine. Less importantly, you have to have a complete copy of Workbench on both partitions and the Preferences can only be set from the Workbench partition. The following command line will install Workbench on your hard drive's second partition (DH1). Boot your machine, open a Shell window and insert your original Workbench disk in the internal drive. Now type:

```
COPY FROM DF0: TO DH1: ALL
```

And that should do the trick.

THE SCSI CONNECTION

I am considering buying a hard disk for my A500. A lot of drives now offer SCSI interfaces. Does this mean I can connect SCSI devices – CD-ROMs and so on – to it? What about other SCSI hard drives? If I buy an A590 will I be able to connect an SCSI drive to it later? If so, will I need a controller for the new drive or would the existing A590 cope with it?

Most hard drives for the Amiga 500 have an SCSI port on the back. If a drive has an SCSI port and the interface supports the SCSI-Direct protocol (the A590 does), then you can get almost any SCSI device (CD-ROM, tape streamers, magneto-optical drives and so on) working with it. They will need special driver software to control them, though. Other SCSI hard disks can be added at a later date without any problem; the SCSI controller is embedded on the drive itself, so all you need is a drive, a power supply and case, and the relevant cable.

WHAT IS RAM?

I have a 1Mb Amiga A500 and floppy drive. I am frustrated by not being able to access *Protext* and *Prodata* at the same time. I will buy more memory but am I better off buying a hard drive?

A RAM expansion increases the Amiga's memory. As programs are loaded from disk into the machine, this memory (RAM) fills up. As you have discovered, if you have insufficient memory to load more than one large program you can kiss goodbye to your multitasking abilities because there is not enough memory to fit another program in.

A hard disk is like a floppy drive except that it is faster, larger and you cannot put fresh disks in. Many of the programs you use from day to day can fit on a hard disk, so there is no need to replace it with a another disk. It is a common misconception that RAM expansion and a hard drive are the same – they are not!

• HARD DRIVE CARE •

Short of physical abuse, the most dangerous thing you can do to a hard disk is switch on. The second is switch off. Toggling the power will wreck the structure and give rise to checksum errors.

The watchword is *care*. Many drives come with a park utility. It moves the disk heads to the park cylinder, an area reserved by the disk during prepping and never used by AmigaDOS. Always park the heads before you switch off, putting them out of harm's way when the drive comes back on and the platters start their spin-up phase – the point at which the damage occurs.

Parking is normally only recommended prior to moving a drive. In practice, however, if the heads are left over the surface, the power-up kick can terminally corrupt data. Many modern hard disks, particularly the Quantum models, are auto-parking, requiring no software. It is very important never to park an auto-parking drive and never attempt to use a park utility designed for use with a different system – If your drive came without a park utility, it doesn't need one.

The problem that you have encountered is down to insufficient storage. Your answer is to increase the memory capacity of the machine by purchasing a RAM expansion. This can be done through the trap-door, through the sideways expansion slot, or by buying a hard disk with space internally for memory expansion.

CURRENT BUN

I have enhanced my A500 with a memory upgrade, second disk drive and colour printer. I am considering buying a hard drive, and possibly the A690 when it becomes available.

I do not wish to change my computer, but am concerned that the power supply may not be able to handle the extra current required by extra peripherals. The current PSU is the original supplied when I bought the machine. How many peripherals can the standard PSU handle and, if I do buy a hard drive, should I buy a more powerful PSU?

How long is a piece of string? The A500 is designed for one extra disk drive and 1Mb of internal memory – that's it. The new A500 Plus is designed for 2Mb RAM and one extra drive. A small amount of power is available on the parallel and serial ports and the 86-pin expansion slot. This is barely enough to drive 2Mb of RAM, a small sound sampler and perhaps a MIDI interface. The problem lies with the motherboard. The tracks making up the PCB are only designed to supply a limited current – draw too much (by adding a beefy PSU and power-hungry peripherals) and the board fries.

Most bigger peripherals come with their own PSUs, so there should be no problem. However, you should be very careful on the hard drive front. First, some hard drives (such as the Protar) don't have their own PSUs as standard. Second, not all designs support a throughport and this may affect peripherals like the A690 – unless Commodore supply a through connector with the machine.

DRIVE AND MEMORY

I have just upgraded to an Amiga 1500 from an A500. I hope to buy a hard drive and memory expansion.

I have seen advertised SCSI interfaces with memory space, so is it worth buying one of these instead of an interface and memory board separately? Which is cheaper? Which option do you recommend? Also, where will I put the hard drive, as I already have two floppy drives?

In our hard drive round up, we found the best drives to be the Supra Wordsync 2000 and the GVP Series II A2000 HC+8. The Supra unit has no room for memory expansion on-board, whereas the GVP drive has room for up to 8Mb. Bearing in mind that a memory expansion board costs around £120 without any RAM chips, the GVP unit seems to be the cheaper option.

There's no need to worry about where the drive will go. Both the card and the drive (which is fixed to the controller card) fit into one of the A1500's slots. There is no need to remove one of your floppy drives.

BRIDGEBOARD SNAIL

I purchased an XT Bridgeboard and hard disk second hand. The hard drive works fine but is it possible to speed it up (it is as slow as a floppy) and make it autoboot so I don't need Workbench floppies?

The Janus hard drives are not fast, because the XT Bridgeboard reads the data from the hard disk, and squirts it through a block of memory that is shared between the Bridgeboard and the Amiga. An Amiga program then detects this data and converts it back to Amiga files. It's just as slow the other way around if the Bridgeboard is trying to read files from a partition on an Amiga drive and controller.

It is faster if you have an accelerator in your Amiga, or if you are using a faster Bridgeboard, but not much faster. Your best bet is to keep the Bridgeboard hard drive purely for the Bridgeboard, and get a new SCSI hard drive and controller for your Amiga side.

As for autobooting, unfortunately the Amiga Janus software has to be running for the PC to boot. You can create a very simple bootdisk that will transfer control to the PC drive when it has loaded, and if you have enough memory you can create a small recoverable RAM disk and copy these files into that so you will only have to boot from floppy once after turning the power on.

OL' STARTUP BLUES

I have an Amiga 1500 with a 20Mb hard drive installed as DH0:. The hard drive was purchased second hand and I therefore have no instructions.

The drive was formatted and ran perfectly until I added a line to one of the startup-sequences on DH0. Now, every time I boot I get an error message "Invalid argument to echo" and "unknown command [1mSpirit". Spirit was resident on the hard disk as a file. All the HD files are still there, but I cannot access anything other than the autoboot files.

I did back up the disk with a PD hard disk backup program, *MRBackup*, but when I try to restore my work, I get a message "Can't lock dh0:" and I can't read the backup disk because it says 'not a DOS disk in df0:'. I know the hard disk is OK because although its icon does not appear, the pointer on boot is the pointer used in the HD boot.

Let's take this from the top. You are assuming the HD is OK because the correct pointer (sprite) appears. In fact, this is taken from the bootup floppy and has no bearing whatsoever on the hard disk.

What has happened is this: in editing your startup-sequence you have inadvertently split a line in two. The original probably read something like this:

```
Echo "Starting *e[1mSpirit"
```

The idea being to print the message in bold – that's what the *e[1m bit means; try it. I suspect that part of the file now reads something like:

```
Echo "Starting *e
[1mSpirit"
```

The first line will generate an error, but it won't stop the startup-sequence script. The second line will – because AmigaDOS is looking for a command file called '1mSpirit"' – note the extra quote at the end. Since it can't be found the script grinds to a halt.

Now to the solution. Boot your hard disk until it stops, then enter:

```
DH0:c/ED DH0:S/Startup-↵
sequence
```

Letter case is not important, but you must enter exactly that. ED should now open the offending script. Position the cursor just after the "*e" part I've shown above, press the escape key (it's marked ESC) then press "J" then [Enter]. Notice how the two lines are joined. Now go through the same sequence again, using "X" instead of "J". That's the command to make ED save and exit. Wait a few seconds, reboot your machine and everything should be back to normal.

The problem with *MRBackup* is odd – but I'm not so surprised. Being PD, it's hardly the most stable of backup programs and my only attempt resulted in dismal failure. I suspect the hard disk must be fully booted before *MRBackup* will be able to work.

DRIVE AND ACCELERATOR

I would like to fit my Amiga 500 with a SCSI hard drive which offers at least 50Mb of storage and will allow me to add 8Mb of RAM to my machine by fitting RAM chips inside the drive. There are so many available on the market that I'm not quite sure which is the one to buy.

At a later date I want to add a CSA Mega Midget Racer processor accelerator to my machine. Is this a good choice?

I've heard that the CSA unit has problems working with some hard drives, so the drive I choose will have to work with the CSA processor accelerator or whichever card you recommend.

There are quite a few 'cheap' processor accelerators but the CSA Mega Midget Racer is about the best. Another card worth considering is the B5000 from Solid State Leisure. It's a 25MHz unit as opposed to the CSA's 33MHz, but Solid State recently slashed the prices on its cards so you may well be able to pick up a B5000 cheaply.

If you're after a hard drive for the A500, then there is only one choice – the GVP Impact Series II. This superb unit is available in 52 or 100Mb capacities and offers an 8Mb RAM expansion capability onboard. What's more, it's very cheap and very fast (it's about the fastest A500 drive available!). Call Silica Systems ✆ 081 309 1111 for more information.

GVP did encounter a few incompatibility problems between its drives and third party processor accelerators but I think these have now been ironed out. If in doubt, check with Silica before you buy.

NO MORE BOOT

After using my A590 hard drive for several months I had to reformat and re-install it. The A590 now refuses to self-boot and can only be accessed when the Workbench disk is loaded into the internal drive.

We certainly can. Under the hard disk partitioning and formatting options there is a gadget to determine if a partition is just mounted or bootable. Start the program called *HDToolbox* and select the gadget marked "Partition Drive" (you have to do this even if you only want a single partition). You now have two options:

- If you want the default setup of two equal partitions, just click on the gadget marked "Default Setup".

- If you want a specific setup, click on the button marked "Advanced Options". This allows access to no less than eight more gadgets.

Now click on the word "No" in the box next to "Bootable?".

Click on the OK gadget to return to the main screen. Finally, click on the "Save Changes to Drive" gadget and exit. Your A590 should now boot as normal.

It isn't usually necessary to reformat and re-copy Workbench after this operation since it only sets a flag in a private area of the disk.

Music for the Masses

Whether you're a budding Beethoven or a suffering SEAL, AudioSculpture could be the tool to launch you to international stardom. Jason 'tone deaf' Holborn puts it to the test

Considering the Amiga's musical talents, there's not been much software produced which really taps this power. Based on the infamous Sound Tracker, *AudioSculpture* looks promising, but is it any good?

Isn't it strange that despite the undoubted power of the Amiga's sound hardware, very few programs have been written which truly exploit it. Sure, there are absolutely loads of samplers available which will enable you to 'grab' a sound from the real world and apply different effects, but try using those samples to write music and you'll soon realise that there's not an awful lot out there.

It seems that developers have given up on the non-MIDI Amiga music market. Perhaps one very good reason for this is the dominance of the Sound Tracker , a rather complex music composition program that started life as a commercial product but eventually found its way into the PD libraries in the form of clones. No-one is quite sure how Sound Tracker clones came about or indeed whether they're kosher or not (they are all based around a commercial product!). One thing is for sure – Sound Tracker clones are here to stay.

BACK ON TRACK

With so many PD Sound Tracker clones now doing the rounds, some would say that a commercial Sound Tracker is doomed to fail, but that's not the view held by the Software Management Group. It has just released *AudioSculpture*, a sound chip-based music composition system that bears more than a passing resemblance to the established look and feel of programs such as *ProTracker*, *NoiseTracker* and a host of others.

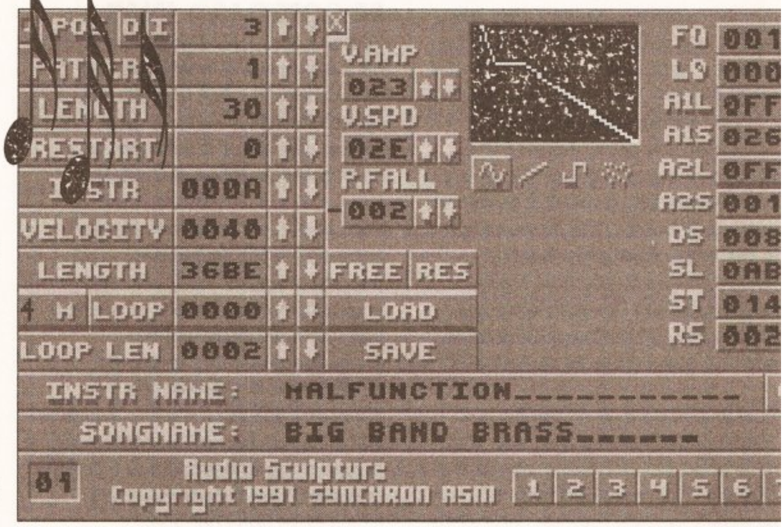
Like most Sound Tracker clones, *AudioSculpture* is primarily a sample-based sequencer, although you can connect up and use MIDI instruments via a suitable MIDI interface. Unless you do intend using MIDI though, you can only play four samples simultaneously. This isn't a restriction in the software, simply a restriction of the Amiga's sound hardware. Several 'Tracker clones have managed to get around this limitation – *OctaMED* in particular – although sound quality often suffers as a result. I'm surprised though that *AudioSculpture* doesn't also support eight channels – especially when you consider its rather high price!

PRETTY PATTERNS

Upon loading *AudioSculpture*, you're presented with the now familiar Sound Tracker-like display. At the top of the screen you'll notice a set of tape transport-like control gadgets which – not surprisingly – are used to start and stop play and record operations. To the left of this is a panel containing a further set of parameter gadgets, the use of which isn't quite as obvious as the tape transport controls. Each 'parameter' within this panel has two associated gadgets which allow you to increment or decrement their value. Eg, there's an 'Instrument' parameter which allows you to select an instrument from those you have loaded.

Running along the bottom half of the screen is the Matrix Editor which is very much where the action takes place. This is the part of the program which you'll find yourself using the most as it is used to enter the performance information (notes basically) which make up your composition. The Matrix Editor is split into four sections, one for each track. In turn, each of these tracks is split into 64 vertical steps, each of which can hold a single note event.

Why only 64 steps? I hear you ask. Well, this gives away another limitation of all 'Tracker clones. Unlike a 'real' sequencer like *Music-X*, you can't just bang in your music from start to finish and expect *AudioSculpture* to record the lot (musicians call this 'Linear Composition'). Instead, your music must be split into 'patterns', each of which cannot contain more than 64 events per track. These patterns are then arranged into sequence to form your song. This approach may appear to be limiting to anyone used to the likes of *Music-X*, but you'll get used to it. If anything, pattern-based composition can save you work because patterns can be used over and over again within the same composition, although you'll have to plan your music far more in advance.



***AudioSculpture*'s AM Editor will enable you to create purely synthetic sounds which eat up very little of your RAM**

SOUND ON SOUND

Before you can write anything remotely musical, the first thing you must do is to load an instrument. *AudioSculpture* supports two different types of instruments – the good old sample (which eats lots of RAM) and synthetic sounds (which eat up very little). Samples are the most impressive, but synthetic sounds can be useful if RAM is a tight. What's more, they have a harsh analog sound to them, so fans of Rave and Acid music will probably fall instantly in love with them.

AudioSculpture comes complete with a respectable selection of samples which cover a wide range of musical styles and tastes. There is the usual collection of bass and snare drums, hihats and toms for percussion tracks, some very nice bass sounds but there's a definite lack of decent lead instruments and not a single string sound in sight. You'll probably find the bundled sounds fine for a while, but you'll

BEGINNERS BEGINNERS START HERE **BEGINNERS**

What is a Sound Tracker?

'Sound Tracker' is used to refer to a music program that was released in Germany a few years back, but its meaning has since changed to describe a type of program – a sound tracker utility.

Sound Trackers are music programs designed to enable programmers and other non-musicians to easily compose music using the Amiga's sound chip. As a result, much of the music you'll hear in games software was written using a Sound Tracker or something similar. The Sound Tracker has become such a standard among programers that even languages like AMOS and Blitz BASIC provide support for them, so they're ideal for this application.



Musicians will probably hate *AudioSculpture*'s Matrix Editor, but programmers will love it! It's definitely not the most spontaneous way to edit samples

soon tire of them (I certainly did!). Thankfully *AudioSculpture* isn't tied to some stupid preset list, so you can pull in sounds from other disks when you want.

You can record events into the Matrix editor in two ways. The first is to simply scroll up and down through the track you're editing using the cursors and then stamp down the note that you want. This method of editing is fine for highly ordered passages – drum tracks and basslines etc.

A more natural method of entering performance data is realtime entry. If you've got a MIDI keyboard attached to your Amiga, you can play directly into *AudioSculpture*. Don't expect the recording resolution of *Music-X* – if you're slightly out of time, *Audio-Sculpture* will pick this up. There's quantization either, so any tidying up has to be done by hand afterwards.

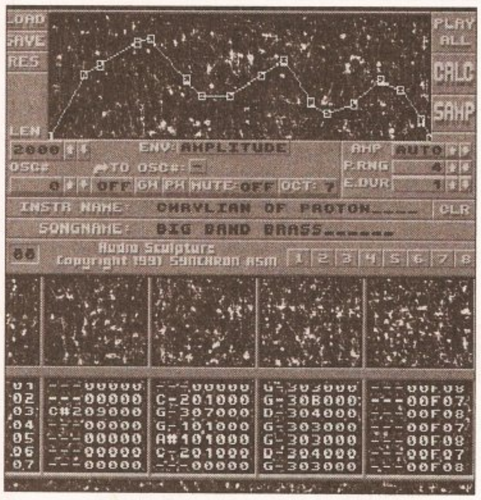
If you don't own a MIDI keyboard, then performance data can be entered using the Amiga keyboard. *AudioSculpture* assigns notes to keys on your keyboard, so you can still play in your killer lead. Obviously this method doesn't quite compare to real ivories, but it does the job.

S-S-SAMPLE EDITING

If the samples supplied with *AudioSculpture* don't quite meet your approval, you can edit them using the built in sample editor. If you've ever used programs like *AudioMaster* you'll feel right at home because *Audio-Sculpture*'s sample editor looks and behaves like most other sample editors. When you first enter it, the selected instrument is pulled in and displayed as a waveform at the top of the screen.

In true *AudioMaster* style, sections of sample can be cut out, copied and pasted down simply by highlighting the section you're interested in using the mouse. Samples can also be tuned, their volume increased and decreased and you can even create a 'chorus' effect using the 'Chord' tool. What's more, sample editing isn't restricted to pre-recorded samples – providing you have a sound sampler that runs through the parallel port (most do), you can grab fresh samples from just about any audio source including CD players (for best results), personal hi-fis and even a microphone.

One problem I encountered was *AudioSculpture*'s dislike for the end of samples. ie, its highlight tool seems to ignore them completely, resulting in a glitch if the end of your sample doesn't end in silence (which, let's face it, they rarely do). The highlight tool doesn't always select the exact area you want either – even if you're in zoom mode, once you let go of the mouse button, the highlight seems to jump either forwards or backwards often resulting in a section of sample that you don't want being highlighted.



One very interesting feature is *AudioSculpture*'s vector synthesis module which applies analog envelopes to samples creating weird effects

MOODY MOOG

Samples can be edited further using *AudioSculpture*'s vector synthesis facility. This rpowerful tool creates synth-like instruments by applying an analog envelope to the selected samples. Using this can be a hit or miss affair – sometimes the resulting sample can sound brilliant but – more often than not – it'll sound naff. Again, experimentation's the key.

Speech can be added to your compositions. Simply by entering a line of text, *AudioSculpture* translates what you have typed into speech which in turn is converted to a sample. The quality of this speech is not brilliant, but experimentation with the parameters can produce interesting results. However, the speech sounds more like a robot with an attitude problem than any human I've ever met (then again...).

Purely synthetic sounds can also be created using *AudioSculpture*'s AM synthesis module. Anyone who's used to the analog synths of old will love this part of *AudioSculpture* because it allows you to create the kind of squelchy acid-like sounds made famous by such wondrous synths as the Moog, OSCar and (my personal favourite) the Prophet 5.

CONCLUSION

There's no doubting that *Audio-Sculpture* is impressive, but who's going to pay £50 for a program that isn't that different from the many PD Sound Trackers?

AudioSculpture is one of the best 'Tracker clones to appear on the Amiga, but to ask £50 for it is ludicrous. PD programs like *ProTracker* may not be as polished as *AudioSculpture*, but no amount of tarting up could ever make up for the price difference!

If you want a commercial Sound Tracker utility, buy OctaMED instead and spend the remaining £30 on a 2-year subscription to *Amiga Shopper*! AS

AUDIOSCULPTURE VS OCTAMED

Disregarding the many PD Sound Tracker clones available, *AudioSculpture*'s only real commercial rival is Teijo Kinnunen's *OctaMED 2*. It's not quite as nicely packed as *AudioSculpture* but the program itself leaves *AudioSculpture* standing. Here's what it has to offer –

8 Channels of Sound – While *AudioSculpture* only gives you four channels of Amiga sound, *OctaMED* author Teijo Kinnunen has beaten the limitations of the Amiga hardware. As a result, up to eight samples can be played at once.

Score Editing – *AudioSculpture*'s matrix editor is great for drum machine programmers, but it's not the most natural way of working for other musicians. With *OctaMED* you choose between a matrix editor and a score editor. The score editor allows you to build up patterns by placing notes on to a stave. You can also view your composition in score format.

Editing – Editing is also far easier in *OctaMED*. Sections of music can be cut, copied and pasted simply by dragging out a rectangle around the bits that you're interested in. *OctaMED* also does automatic record quantization, therefore keeping your music in time.

SHOPPING LIST

AudioSculpture.................. £49.95
by Expose Software, 2a Rue Tonin Magne 13320, Gemenos, France

Distributed in UK by:
Software Management Group
150c Main Street
Bingley BD16 2HR
☎ 0274 562999

CHECKOUT AUDIOSCULPTURE

Ease of Use ●●●○○
Easier than the average Sound Tracker, but still far from user friendly.

Features ●●●●○
Not quite as feature-packed as *OctaMED*, but *AudioSculpture* compares well to its PD rivals. It would have been nice to have had some form of score editing though.

Documentation ●●●○○
The manual is well produced, but it doesn't seem to tell a lot. Most people aren't used to Sound Trackers, so a tutorial wouldn't have gone amiss.

Accessibility ●●○○○
Producing individual patterns is simple, but the process of stringing these together to form a song is a real pain. How about an arrange page for version 2 chaps?

Price Value ●○○○○
AudioSculpture doesn't really offer anything that can't already be found in most decent PD Sound Trackers so the £50 asking price is just plain stupid.

Overall rating ●●○○○
If *AudioSculpture* was to be sold for something like £15, I could see it doing well. As it stands, you'd be foolish to pay more than that. Buy OctaMED 2 instead!.

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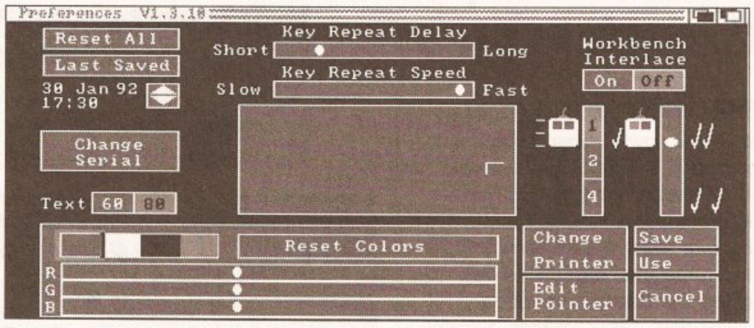
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10 Top tips for Workbench

In this new series we'll be giving you advice and tips on how to get the best from your Amiga, its add-ons and its software. This month, Cliff Ramshaw reveals the secrets of Workbench



Top tip 4 – From screen size to mouse speed, you can customise your whole set-up with the aid of the Preferences screen. Printer and serial port (used for modems) settings can also be altered

Much of the Amiga's power goes unnoticed by the new user, who instead often becomes frustrated at its apparent inability to carry out a simple task. Much of this frustration can be avoided by learning the little tricks and tips that make life easier.

Here we present you with ten tips for getting to grips with the Amiga's Workbench. Avoid all that tiresome rummaging through countless reference manuals. Read on, and become a power user...

❶ Drawers – a convenient means of filing programs and data. Placing something in a drawer is a matter of selecting its icon, dragging it over the drawer and releasing it. A new drawer is created by making a copy of the existing Empty drawer. (Select Duplicate from the Workbench menu). This can be renamed and placed wherever you like.

Have an organising principle behind your drawers. You might choose to place all of your DTP software in one drawer, all of your programming languages in another, and all of your graphics files in a third. There may well be drawers within each of these, determined by each package's requirements.

❷ The Trashcan – get ride of an unwanted file by dragging its icon into the Trashcan; even a drawer and its contents can be deleted this way.

Nothing is actually removed from the disk until you click on the Trashcan and then select Empty Trash from the Disk menu. Until then you can double click on the Trashcan and it will reveal its contents in a window.

❸ Snapshot – is used to reposition icons and windows.

If you want to move an icon to a different area in its window, select it and move it to its new home. Then select Snapshot from the Special menu, thus storing its new position.

Windows can be moved around the Workbench screen and re-sized in a similar manner – to do this the window alone must be selected.

You can Snapshot several icons by multiple selection. While holding down the [Shift] key, select each icon in turn by single clicking on it. They should all become selected. Now choose Snapshot; all of their new positions will be remembered.

❹ Preferences – the Preferences program, found in the Preferences drawer of Workbench, enables you to customise various Workbench settings: screen colours can be altered with the slider controls at the bottom left of the screen; the sensitivity of the mouse can be adjusted such that a physical movement corresponds to a varying degree of movement in the screen pointer; and the delay between a left mouse button double click can be altered, as can the key repeat speed.

You can choose between having 60 and 80 characters in a column – 60 columns is easier to read on a TV. There is also a choice between interlaced and non-interlaced screens. An interlaced screen has twice as many horizontal lines in it, and as such it can display twice as much information.

❺ Initialize – prepares disks for use by the Amiga. Any blank disks you buy must go through this process before anything can be stored on them. If you initialise (sometimes called 'format') a disk already in use, then all information stored on the disk will be lost.

To initialise a disk, put it in the drive, click on its icon once and select Initialize from the Disk menu.

❻ Duplicate – copies the entire contents of one disk to another. Click on the disk to be copied and then select Duplicate from the Workbench menu. You will be asked to periodically insert the source (the disk you are copying from) and the destination (copying to) disks as the process goes on.

Duplicate can also be used to copy files. Select the icon and then Duplicate.

❼ Copying files without icons – often necessary when copying PD programs to Workbench or hard disk.

If a file doesn't have an icon, the only way you can see it is via the Shell. Open the Shell and make the Dir, Copy and Makedir commands resident by typing:

```
resident c:dir
```

and so on. Then insert your PD disk and find out what is on it by typing 'dir'. Transfer each of the listed files to your destination disk using the Copy command:

```
copy df0:FileOfInterest ↵
MyDisk:
```

Other files will be held in directories. If directories with the same names already exist on your destination disk, then copy the files into those directories. Otherwise, make a directory of the same name on the destination disk:

```
makedir MyDisk:NewDirectory
```

and then copy the files across.

❽ Info – among other things, this Workbench menu option can be used to link a project with its parent application. If you have a program written in AmigaBasic, then you can write the name of its application and where it can be found in the Default Tool box of the file's Info window – in this case 'Extras 1.3:AmigaBasic'. You can then use the project by clicking on its icon instead of having to click on its application first and loading the project from there.

If you later move the application to another disk, you can modify the Default Tool box in the project's Info window to point to the application's new location.

❾ SetMap – tells the Amiga which national keyboard you are using. It is found in the Systems drawer.

Click once on SetMap, select Info from the Workbench menu, click in the Tool Types [Add] box and type:

```
KEYMAP=gb
```

(The first word *must* be in capitals.) Press [Return] and click on [Save]. Now run the SetMap program by double clicking on it, thus setting up your keyboard as a British one.

❿ RAM Disk – can be used like an ordinary floppy disk, but is faster and its size is limited only by the memory available.

Periodically save your work to floppy, because a power loss or a reset will erase its contents. AS

Pack a devil of a punch

"This package arrived as I was in the middle of some *Devpac 2* work – giving me the chance to check out differences between the releases..."

HiSoft has released a major upgrade to its assembler package. It's called Devpac 3. Paul Overaa puts it through its paces

Hisoft's 68000 *Devpac* Amiga assembler package has been around for quite a few years and during that time a large user-base has formed. Most *Devpac* users will tell you that the package is popular for two main reasons. Firstly, it is a robust program which does the job that it is supposed to do. Secondly, it has proved to be a stable, well supported product!

So, since *Devpac* has been an undoubted success, why make major changes? Well, new Motorola 68000 family processor/coprocessor units have appeared and the *Devpac* assembler needed to be updated to allow code production for these new units. The *Devpac* editor and the *Devpac* debugger were also (despite their robustness) beginning to look dated and, to cut a long story short, it was decided that major revisions in this area were essential. Workbench 2's even more user-friendly goodies, provided food for thought and the end result of the development work, *Devpac 3*, has now been released...

Before getting stuck into the review proper there are a few things which need to be said: with most products a reviewers job is simple – you look at the product and speak your mind! With programming tools such as an assembler environment it is not so simple because there are likely to be two distinct review-reading audiences – competent 68K Amiga coders who primarily want to know what the latest *Devpac* offers... and programmers (perhaps already familiar with languages such as Basic or C) who would like to make a start with 68000 coding but are not quite sure what to expect.

I'm not going to turn this review into a 68K programming tutorial but I will try and explain the purpose, and the benefits, of some of the *Devpac* facilities. The main tools (the editor, assembler, and debugger) will come under the usual close scrutiny but, as well as discussing points of interest for new users, I'll look at what's on offer for existing *Devpac* users who are thinking of upgrading.

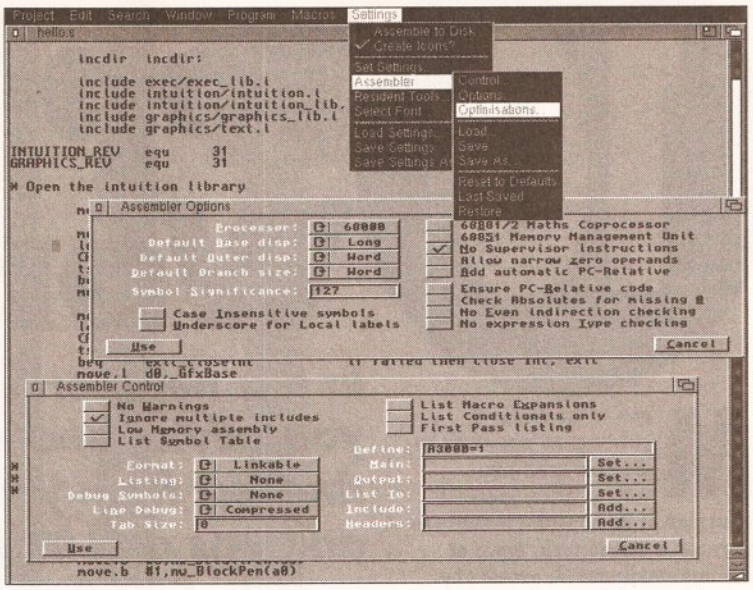
THE DOCUMENTATION

When you open *Devpac 3* you'll find four disks, a manual, and a pocket 68000 programming guide. The disks actually constitute two separate two-disk sets each being a main 'programs' disk plus a disk holding the Commodore official include files, linker libraries, function description files etc. One set has been created with Workbench 1.3 users in mind, and the other for new Workbench 2 users. *Devpac 3*, as with earlier releases, will run on anything from a basic 512K A500 machine upwards and, since the disks are not copy protected, it can easily be installed on a hard drive.

THE DEVPAC EDITOR

The new editor, and its menu system, has been well planned and both versions make extensive use of Workbench 2 style requesters and gadgets. You'll find action gadgets and buttons, check-box gadgets, radio buttons and gadgets that cycle through options when selected. File operations now use the ARP (or the ASL in the case of the Workbench 2) requester so all file operations have become a lot easier. One of the big changes is that the editor lets you work with multiple files and even allows you to open more than one window in the same file (handy for multiple copy and paste operations between different areas as you don't have to keep moving between the source and destination sections).

It's the Edit menu that provides the new clipboard cut/copy/paste facilities and the good news is that these can now be done by proper mouse-controlled marking, ie by holding the left mouse button down



These days with the new release of *Devpac 3*, you don't even need to work from a Shell window

• JARGON BUSTING •

If the world of assembler, and its associated jargon, is new to you – check out the languages column in last month's issue!

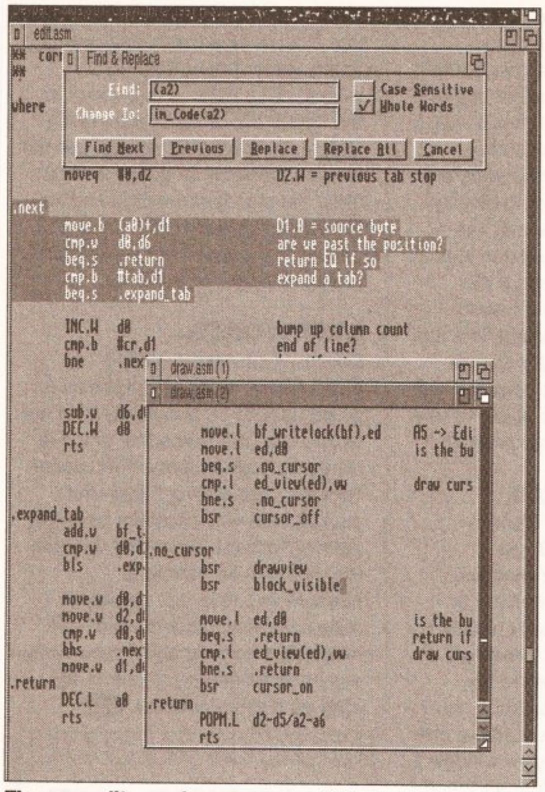
WHY BOTHER WITH 680x0 ASSEMBLER ANYWAY?

Assembly language programs run *fast* and knowing something about your machine at this level of programming will help you get a gut feeling for what computing is all about. As you've probably guessed *all* Amiga languages end up generating 68000 code (they have to otherwise the final programs wouldn't run) – so what is it that actually makes code written by assembler programmers run faster than the equivalent 68000 code generated by programmers working with high-level languages? The answer is that the assembler programmer can make sure that their final code is efficient. Here's a typical example...

As you doubtless know, the Amiga has a vast number of pre-written routines (organised as a collection of units called run-time libraries) available. These libraries are accessed indirectly via a jump table immediately below the library's in-memory base address and by using negative offsets called LVO values the programmer can specify which routine is to be called. These routines are used by placing the library's base address in register a6, using the LVO as a displacement value, and performing an indirect subroutine call.

Now let's consider what happens with a conventional C compiler: the compiler starts by pushing function call parameters onto the stack. Now when you are calling an Amiga library function this is a total waste of effort because at the end of the day the Amiga run-time libraries expect parameters to present in the 680x0 processor registers. The bottom line is that, before the real library function call can occur, the parameters (so carefully placed on the stack by the compiler generated code) have to be immediately copied back into suitable processor registers. The code stubs which do this are part of the amiga.lib library and this, plus the fact that the LVO values are also needed, is the reason why C programmers usually link their code with the amiga.lib library in the first place.

The resultant C code therefore ends up doing a lot of unnecessary work and of course this slows the program down. By placing library call parameters directly into the appropriate 680x0 registers the assembly language programmer can eliminate that type of inefficiency very easily indeed. (To be completely fair, compilers, such as Lattice/SAS C, do now support register based parameter passing but it is a fairly recent facility).



The new editor makes program editing a piece of cake

and wiping the mouse over the area of text or program-code you wish to mark for copying. Being able to view and copy sections between different windows of different projects is a major plus for the new editor.

SEARCH SOLUTIONS

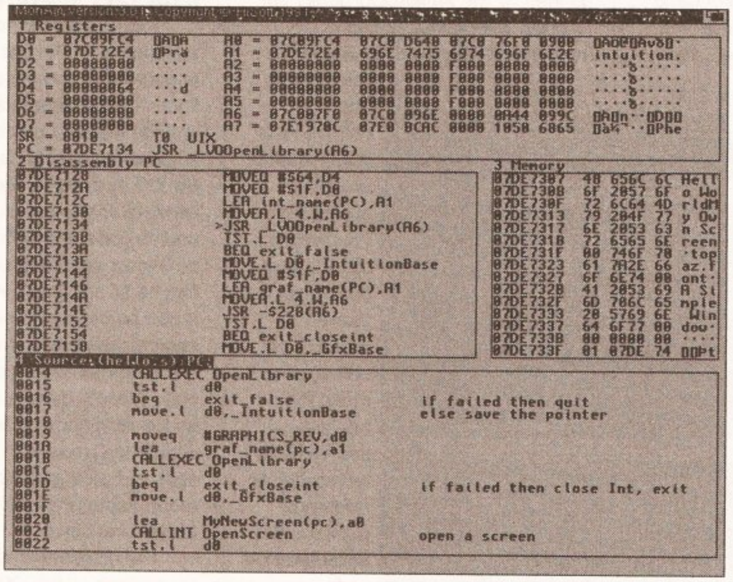
The Search menu now offers improved (easier to use, better looking and faster) requester-based 'find' and 'find-&-replace' options, and a bookmark scheme enabling you to use up to ten place-markers within a project. Also provided is a macro facility which lets the editor learn, and replay, useful sequences of keystrokes. It is however a fairly basic 'single definition with multiple repeats' option and keystroke macros cannot be saved to disk.

A Settings menu allows you to set the editor and assembler controls and define the usual types of global settings for tab size, end-of-line behaviour, auto indenting, automatic back-up creation and so on. Window arrangement is controllable by a menu which allows the view arrangements of the various project windows to be altered (stacked, diagonally offset etc.) Most editor settings can be saved to disk and when the editor has been asked to create project icons, things like bookmark settings can also be stored with the project.

The assembler options themselves are grouped into three separate requesters which are called up by selecting one of three items on the assembler settings sub-menu. A control requester provides control over basic assembler operation, source and destination file paths, listing control etc. The Options requester gives access to the more technical assembler settings (identifying processor, coprocessor and MMU types, ensuring PC-relative code, producing local label underscoring and so on). The third requester provides a range of assembler optimization settings.

As with earlier *Devpac* editors the new version provides automatic location of errors in the source after assembly (via find error, previous error and next error menu options). Create the source code using the editor and select 'assemble' from the program menu. Edit/assemble until the assembly process is error free and you'll then be able to run the code directly from the editor's program menu. In short it is possible to create, assemble, debug, run and save your code without ever leaving the *Devpac* environment!

As usual with larger programs there are more options than space permits us to talk about – you are, for instance, also able to make the assembler and/or debugger resident, control font usage, set the editor's



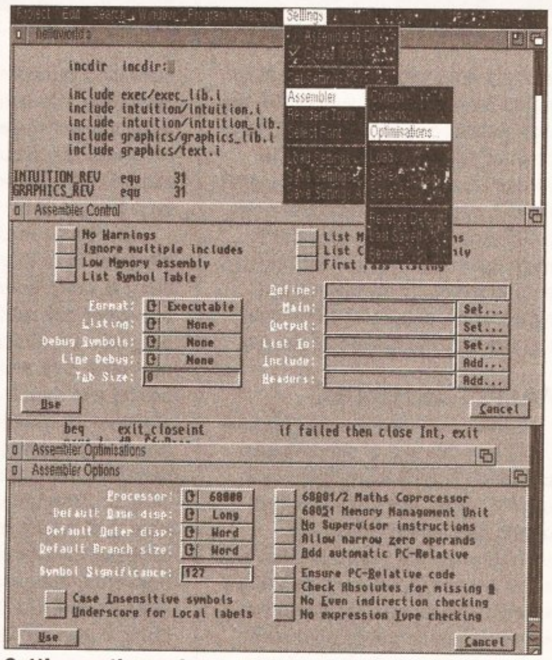
The *Devpac* debugger – brilliant and very powerful

printing parameters and make projects read only (so that you don't inadvertently alter a file that you've opened to use just as a clipboard source document). Many options have Amiga-key menu shortcuts or Shift, Ctrl or Alt keyboard sequences so experienced users can bypass the sometimes time-consuming menu operations if they so choose.

The Devpac editor comes across as being similar to, but in many ways much better than, products like the Lattice/SAS's LSE editor (no ARexx links though). It is powerful, has a modern look, and because it provides direct links to the *Devpac* assembler and debugger the end result is that the whole 'edit... assemble... re-edit to correct errors' cycle becomes very fast.

At the end of the day the important thing is that *Devpac 3* environment, with the editor as the main anchor point, still has all that made *Devpac* popular in the first place but it has become much more user-friendly. The ease of use and better integration will appeal to competent 68000 coders and newcomers. The former will find that the new type of environment saves time, the latter that the process of creating an assembly language program becomes far less traumatic!

First impressions of the new editor have been very favourable but there are a couple of areas where additional improvements could still be made. I'd like to see a current line number indicator somewhere on the editor display (say in the scroll bar). It would also be nice if sections marked out and highlighted by 'mouse selecting' remained highlighted after being copied to the clipboard buffer – this would provide a permanent reminder of the current clipboard contents. At the moment the high-lighting disappears the moment the marked section is copied to the clipboard buffer.



Setting up the environment just couldn't be easier

THE DEVPAC ASSEMBLER

Devpac's assembler is called GenAm and it is a fast full-spec version which can be used both from the editor menu or as a stand-alone program. GenAm, as existing users will know, has all the 'bells &

SUMMARY OF NEW DEVPAC 3 FEATURES

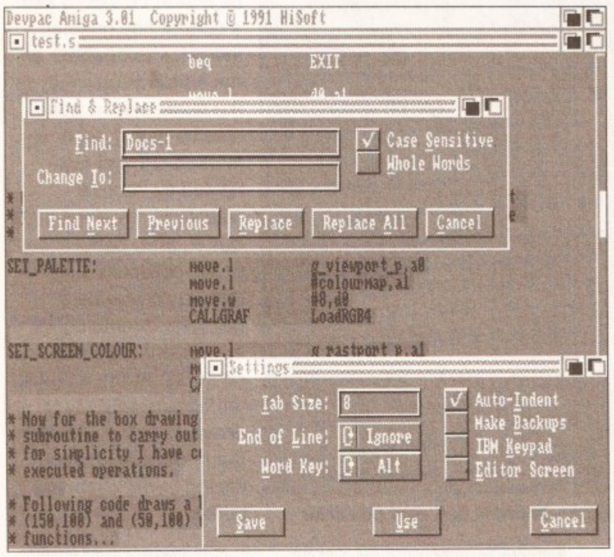
The editor has been greatly enhanced and now offers multiple-file editing with full mouse-controlled cut-&-paste facilities, enhanced menu selection and a 'Workbench 2 style look' (even when running under Workbench 1.3).

Especially useful editor features include the ability to open individually scrollable multiple windows on the same file, bookmark set and locate facilities, a macro recording facility for memorising complex keypress sequences, and powerful assembler/debugger integration options.

The assembler now supports 68000-68040, 68332, 68881/2 and the 68851 MMU. It can produce S-records, can generate and process pre-assembled include files and can create more source-code tracking debugging info. On the debugging side things have also changed... the *Devpac* debugger has a new look (which includes an updated register display) and a very flexible, user-configurable, multi-window arrangement. The debugger can, incidentally, now handle multiple files.

whistles' expected of a modern day assembler – it provides comprehensive expression handling supporting *, /, +, -, =, bitwise and/or/xor/not, left and right shifting and the usual inequality operators. Like many assemblers it supports decimal, hex, octal, binary and character constants but the new version also offers floating point constants for 68881/2 coprocessor applications. *Devpac* does allow the use of local labels and, by default, all label names are significant to 127 characters.

As far as assembler control is concerned GenAm has all the usual options: if for instance you want to suppress warnings, ignoring multiple-file includes, eliminate symbol-table and macro listing and create a runable (executable) end file... then GenAm will let you do it. At one time I would have said that support for the floating point co-processors etc, was not going to be that useful to the average user, but times are changing and with some of the excellent new accelerator boards now on offer to Amiga users this *Devpac* is likely to be snapped up by ray-tracers and anyone who wants to try their hand at attacking their 68881/2 directly.



***Devpac 3* is designed to look good even with Workbench 1.3**

MACRO ASSEMBLY

GenAm is a macro assembler, ie it supports the use of pre-defined instruction groups identifiable by a suitable name. These groups can contain parameters which are inserted when the macro is used and as the assembler encounters them it expands the shorthand form to the real assembly language equivalent.

One very handy feature of the new *Devpac* is that it supports the use of imported symbol tables, ie include files that have previously been read into the assembler and pre-assembled to create a file containing all the relevant definitions. In fact when searching for an include file GenAm looks first for a file of the same name but with a .gs extension... if such a file is found GenAm will assume that it is a pre-assembled equivalent and will use it in preference to the file originally specified. The benefit of using such pre-treated files is faster assembly times and Devpac's symbol table generation option can be used to good effect with the Amiga system headers themselves.

The assembler can now generate executable code, linkable code, and Motorola standard S-records (a format used by EPROM programmers) and it includes a number of options for providing debug data in its output files. SYMBOL hunks (as defined by the AmigaDOS binary file format), LINE debug hunks (recognisable by Lattice/ SAS's CodeProbe), and compressed HCLN chunks are all supported. The purpose of including such data is that it enables the debugger to make the original source-code labels visible reference points in the disassembled code. Because the final code size is increased you normally only include debugging info during the program development stages – by reassembling with the debug options off the excess data can be eliminated in the final version of the program.

GenAm does of course have far more facilities than we can mention but it is worth pointing out that some are especially useful to the Amiga programmer: Multiple hunks (including chip and fast) are supported and there's an INCBIN directive for including binary files (useful for reading in sprite data and general screen graphics). If you are *Devpac 2* literate you'll be pleased to hear that, where new GenAm facilities have been implemented as keywords, the assembler still supports the old *Devpac 2* way of doing things as well.

THE DEVPAC DEBUGGER

Programs written in assembly language are particularly error prone and even slight coding errors can spell disaster. This being so all commercial assembler packages provide debugging facilities. *Devpac*'s debugger is called MonAm.

MonAm is a low-level debugger able to step through a program displaying code instructions, 68000 register contents, processor status, and memory contents in hex or ASCII form as it does so. If you have included debug info in your program the MonAm can use that to display your original program labels. The debugger can also be used to look at compiler written code and if the package that produced the code included line number debug data it is even possible to view the original source code! GenAm is powerful and its major feature is this ability to use symbols from the original program.

DISPLAY CONTROL

The new version of MonAm supplied with *Devpac 3* has undergone some major changes. Four window types are defined to provide views of processor details (register contents, flag values etc.), 68000 mnemonic disassembly, memory contents hex or ASCII, and source code. Up to five windows can be shown simultaneously – window 1 can be of any type – windows 2 and 4 can be memory disassembly or source code – whilst windows 3 and 5 are restricted to memory displays only. There's quite a lot of freedom as far as window arrangement is concerned (most can be widened, split and arranged) so there is far more display control than with earlier GenAm versions.

The disassembler now recognises all 68000 family processor instructions, including the 68040, maths coprocessor and MMU instructions. The register display has of course been updated to show the registers available on the newly supported processors. GenAm windows can now be locked to allow interactive monitoring of complex data structures and any number of source files may be loaded into each window along with any associated line number debugging info. Multi-module programs can therefore be single-stepped line by line from your source files. Two powerful new operators are provided which convert a program address into a source-code line number and locate any part of the program from its source position.

Like the *Devpac* assembler, the MonAm debugger program can also run as a stand-alone program but most users will of course access it directly from the menus of the *Devpac* editor program.

OTHER COMPONENTS

As well as the editor, assembler and debugger the *Devpac 3* package includes Blink, the Amiga's de facto standard linker, a program called SRSpilt which is an S-record splitter utility and a utility called FD2LVO which converts Commodore FD files into include files containing direct library vector offset data (LVO values). This latter is equivalent to the ConvertFD utility supplied with *Devpac 2*. You do, of course, get the Official assembly language include files, the standard run-time and link libraries (plus extra maths and IFF parse libraries) and some example programs to get you started.

LAST WORDS

Devpac 3 provides a superb environment. Existing *Devpac* users would have to be absolutely mad not to upgrade (the new editor alone is worth the upgrade fee). New users? They also are getting a powerful package which is excellent value for money. Perhaps those that will gain the most will be absolute newcomers... they are getting an assembler environment which will help make learning about, and using, assembly language just about as easy as it ever could be! AS

SHOPPING LIST

Devpac 3 .... £69.95
Upgrade from Devpac 2 ...... £34.95
available from HiSoft
The Old School, Greenfield
Bedford MK45 5DE
☎ 0525 718181

CHECKOUT DEVPAC 3

Ease of Use ●●●●○
Use of the Intuition/Workbench 2 style of doing things has produced a package about as 'user-friendly' as any assembler.

Features ●●●●○
Many new exotic extras but it will be the day-to-day things such as requester-based file operations and being able to cut & paste between different windows etc, that will make the most impact!

Documentation ●●●○○
As always good, reliable, documentation.

Speed ●●●●○
So fast that assembly times for most reasonable size programs will, when working in RAM, be negligible (measured in seconds rather than minutes). For most users it will be the new style user-interface which produces the biggest time savings!

Price Value ●●●●○
Worth every penny of the asking price just for the new editor. Don't forget that the package also gives you those all-important official Commodore include files. Existing *Devpac 2* users haven't been forgotten... HiSoft are offering half-price upgrade path.

Overall rating ●●●●○

The latest *Devpac 3* improvements put HiSoft's assembler package back where it belongs – at the top!

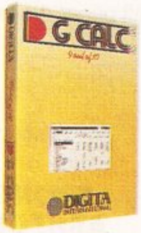
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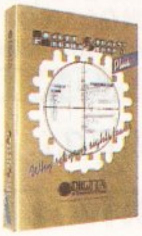




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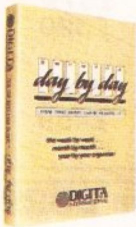
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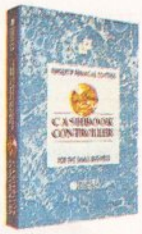


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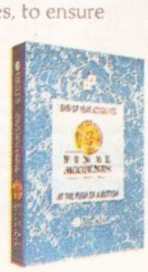
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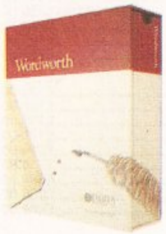


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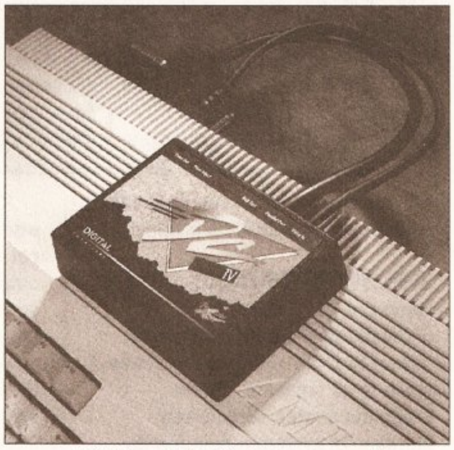
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More Colours for Less

Left out of the 24-bit graphics revolution? If so, then Digital Creation's DCTV could be what you've been looking for. Jason Holborn gets colourful

Let's face it, we'd all like to have access to 16 million colours, but who can actually afford the asking price of such wondrous devices as GVP's IV-24 card? I certainly can't! Digital Creations' DCTV could well be the answer.



DCTV as it fits in to the back of your Amiga. Just one step away from pictures of stunning quality

They say time waits for no man and this is certainly true in the computer market. Back in the days when the Amiga was still very much the new kid on the block, its graphics capabilities were second to none, but – not surprisingly – that situation has changed. Sure, the Amiga is still capable of great things (products such as *Deluxe Paint 4* and *Sculpt 4D* bear witness to that), but while the developers of the Amiga have seen fit to rest on their laurels, the competition has not only matched the Amiga, but left it for dead.

Not content to see the Amiga go the same way as such ground-breaking failures as the Apple Lisa and the Atari 800, third party developers have been quick to remedy the situation with the release of 24-bit graphics boards which push the Amiga's graphics capabilities into the realms of true colour broadcast quality imaging. The release of the Amiga Centre Scotland's Harlequin card laid the foundations for a host of professional 24-bit graphic cards which could give the Amiga the ability to more than match the likes of high end Macintoshes, PCs and even dedicated workstations.

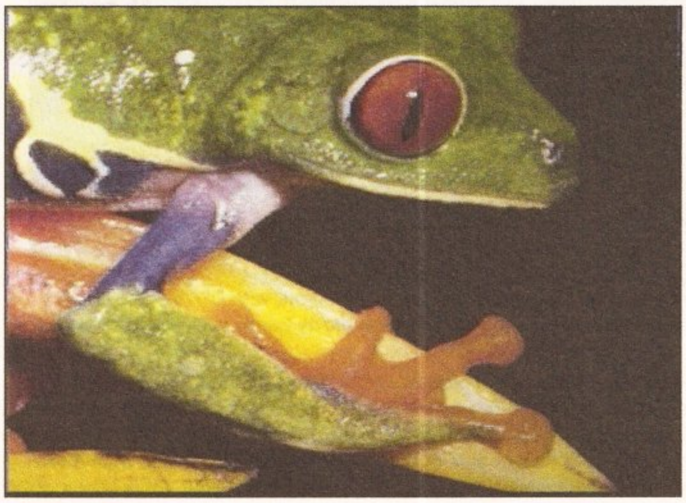
Like all things in life though, you get what you pay for. Fact is, most 24-bit graphics cards are so expensive that most of us are about as likely to own one as we are to own a Ferrari. Even if you could afford one, the problems don't stop there – boards like the Harlequin need many megabytes of RAM and a hefty hard drive just to get started!



With images of such great quality, wild horses won't be able to prevent you from wanting one of these nifty little devices

BUDGET 24-BIT (ALMOST)

For those of us with more modest budgets, there is still hope in the shape of DCTV (Digital Composite



Way down deep in the middle of the jungle... DCTV immortalises an Amazonian rainforest frog for posterity

BEGINNERS START HERE

What does 24-bit graphics mean?

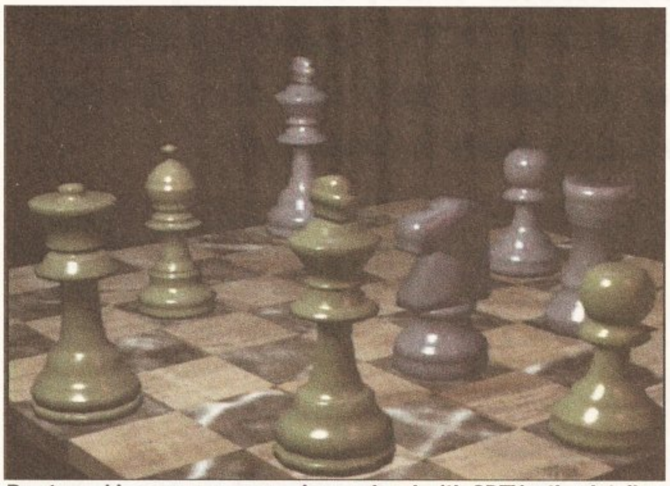
All Amiga displays are built up of what the techies call 'bitplanes'. Each bit within a bitplane represents a single pixel on the screen and can be either on or off (represented inside the Amiga's memory as either a 1 or a 0). Because only two combinations are possible with a single bitplane screen, it can display only two colours.

By adding more bitplanes, your screen will be capable of holding more colours. For example, a two bitplane screen allocates two bits to every pixel which gives four different binary values – 00,01,10,11. Each pixel can therefore be one of four colours. The theory behind 24-bit images is exactly the same but on a much larger scale – instead of just the four combinations that you'd get with a 2 bitplane screen, a 24 bitplane screen would give you a total of almost 17 million combinations (16,777,216 to be precise!). A single pixel within a 24-bit image can therefore be any one of 16.7 million colours.

DCTV works differently. Instead of storing an image as bitplanes, it stores a digitised version of the composite video signal that is sent to the monitor to display the image. The DCTV image is equivalent to a sample of a sound. The image happens to take up the same space as a 16 colour hi-res screen, but in fact can contain several million colours.

When the image is displayed, the sampled composite signal is converted to its analogue equivalent and sent to the monitor/TV, in the same way that a sound sample is converted sent to a speaker.

Television), a 'budget' pseudo 24-bit graphics board from US-based Digital Creations – a company better known to Amiga users for its impressive range of genlocks. DCTV has been available in the States for quite a while now, but it's been an impressive feat of engineering to convert what was previously an NTSC-only product to work under



Ray traced images are a pawn in your hand with CDTV – the detail above shows that someone's been pretty handy with the Mr Sheen

good old PAL. Let's just hope that other Stateside companies follow their lead and convert NTSC video products to work on this side of the pond (are you listening NewTek?).

Like its main rival HAM-E, DCTV comes in the form of an external box that connects to the Amiga via the parallel and RGB ports. As a result it can work on just about every Amiga, including the Amiga 500 *and* the original A1000 (although you'll still need a gender changer for the parallel port). Accompanying the DCTV hardware are four disks containing the DCTV suite of programs and a wealth of demo images plus a nicely presented ring-bound manual.

FUZZ-BOX

Unlike nearly all of the competition, DCTV isn't an RGB device. Instead of working in combination with the Amiga's existing RGB output (like HAM-E), DCTV works by converting the output from the Amiga into a composite signal. What this means is that you'll need a television or monitor (the standard Commodore 1084, for example) which can accept a composite signal to actually display the output from DCTV in its full glory.

If you don't own a monitor and your TV will accept nothing more than a standard RF signal, then don't worry – there is a way of getting around this limitation as long as you have access to a video recorder. Most VCRs have a 'Video In' connection which allows you to feed a composite signal into them. By connecting the output from DCTV into this socket, your VCR can then be used to convert the composite signal into RF format ready for display on your TV.

The only disadvantage of DCTV's approach is the fuzziness of the images which it produces. As any video engineer will tell you, composite signals are hardly renowned for their sharpness, so it's inevitable that you'll initially feel more than a little disappointed with DCTV. However, I can guarantee you that after little more than a few hours use, your impressions of DCTV will change dramatically.

The fuzziness of DCTV's images aren't really a problem if you're a video enthusiast. Because DCTV works in composite, it's ideal for most video applications and can even be fed into a genlock running on a separate Amiga for further work. Just think, if you're lucky enough to have access to two Amigas, the combination of a decent genlock and DCTV will allow you to produce videos that incorporate both pseudo 24-bit graphics and Amiga-generated titles. Now that is impressive.

GRAB AN IMAGE

24-bit images look nice, but there is one problem which all 24-bit cards (and ones which pretend to be) share: how do you get the images into your Amiga in the first place? Well, there are two ways of obtaining images suitable for 24-bit display – ray tracing (virtually all ray tracing packages support 24-bit output) and digitising. Obviously ray tracing is hardly the quickest solution, so Digital Creations has kindly thrown in an extra bit of hardware which more than solves the problem – a fully-featured video digitiser!

DCTV's video digitiser can grab images from just about any composite (surprise, surprise!) source including colour video cameras (including Canon's excellent still frame 'ION' camera), laser disk players and VCRs equipped with a decent freeze frame facility. As you can see from the images shown within these pages, the overall quality of grabbed images is on par with just about any Amiga video digitiser you care to compare DCTV with. And don't forget you have the added benefit of DCTV's display!

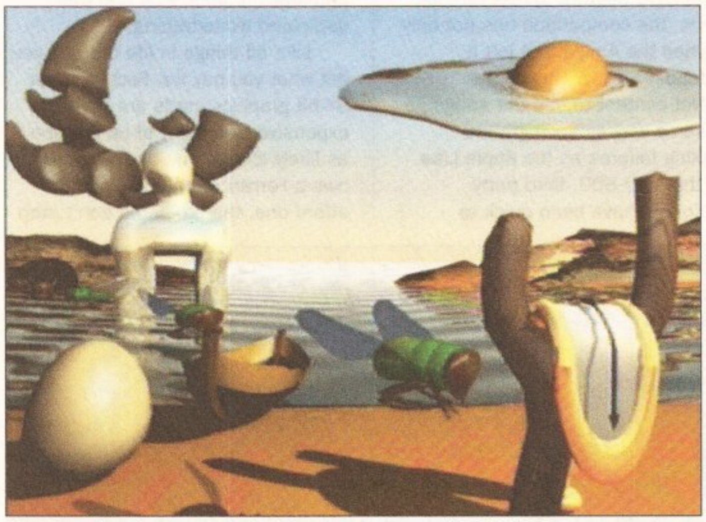
DCTV IMAGES AND THE AMIGA

As far as the Amiga is concerned, DCTV images are really nothing more than 16-colour high resolution screens. Indeed, if you display a DCTV image on an RGB monitor, you'll see nothing more than a greenie-grey mess, but pass it through to a composite monitor and you'll be amazed by the transformation.

DCTV distinguishes between a 'real' sixteen colour high resolution image and a DCTV image by placing a series of control codes at the top left hand corner of the image. If DCTV finds these codes, it converts the image to an analogue composite signal, otherwise it leaves the image alone.

THE SOFT OPTION

While the DCTV hardware is undoubtedly impressive, the one aspect of DCTV which really makes it shine is its software. Digital Creations quotes some pretty outrageous system requirements though – 5Mb of RAM and two monitors – but you can get by with just a 1Mb. The DCTV software has been designed in such a way that it is fully integrated, allowing you to flip



Here's a fine 'eggs-ample' of the true power of *DCTV Paint* – accurate colour representation brings Salvador Dali's surreal masterpiece to life

between the modules on offer without having to mess around with the Workbench. This isn't really possible unless you have heaps of RAM on offer, but each module can be run independently for those with less well endowed systems.

When you first load up the DCTV software, the first thing you'll notice is the overall professionalism of the whole package. HAM-E was undoubtedly an impressive little system, but the one thing that really lets it down is the quality of its software. Sure, no-one could doubt the power of HAM-E's *Image Professional*, but it was such a pig to use! This is one similarity which DCTV most definitely doesn't share with HAM-E – thanks to a logical design and some very pretty front-end graphics, the DCTV software is not only easy to use, but fun too.

The first thing you'll want to do when you first connect up DCTV is to get a taster of the quality of its output. Digital Creations has kindly supplied us with a wide range of images that amply show off DCTV's power. These are stored in standard IFF format (equivalent to 16-colour high res images) so you can view them without ever loading the DCTV software.

THE GRABBING HANDS

The first module on offer is DCTV's digitiser page which – not surprisingly – gives you control over DCTV's digitiser. Once again, the presentation and design is totally first rate, so if you're feeling adventurous enough you can plough straight in without even reading the manual. Once you've got your video source fed into the appropriate socket on the back of the DCTV hardware, a single click on the 'SCAN' option sets the digitising process in motion. Before grabbing an image though, DCTV gives you a preview of the image it is being fed by passing the composite signal through the hardware directly to your

composite monitor. Once you're happy with the image, a single click on the left mouse button and the image is grabbed into memory. The actual digitising process takes about 10 seconds in all, so you must ensure that the image being grabbed is frozen during this time.

After a further few seconds, the image will appear on your monitor. If you're happy with it, it can be saved straight out to disk or loaded directly into DCTV's paint program, but adjustments can be made using the digitiser's built-in image processing tools if the image isn't quite up to scratch. They're pretty basic, but the standard tools are there to allow you to alter your image's contrast, brightness, sharpness and the red, green and blue content.

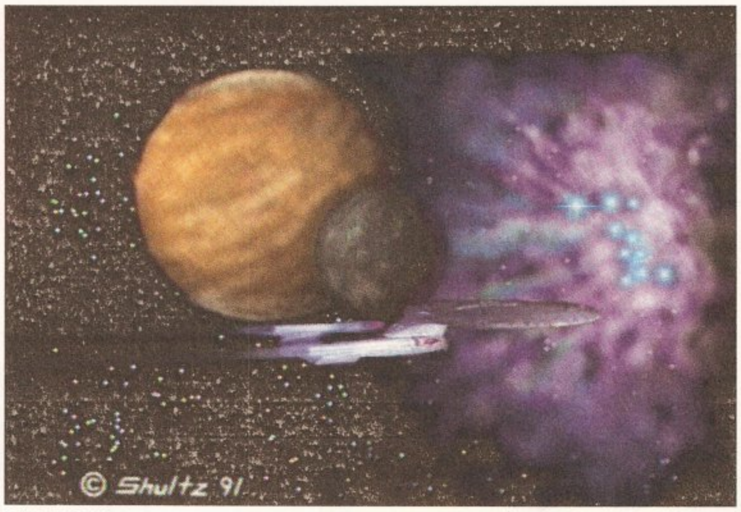
PAINT AND BE DAMNED!

Moving on from the digitiser, the next step is to enter DCTV's paint program, called *DCTVPaint*. Like the digitiser screen, the paint screen's requesters and gadgets feature the same bas-relief look which further adds to the impression of professionalism. If you're running DCTV as an integrated system on a 5Mb machine, the image you grabbed will be pulled directly into the paint module, so there's no faffing around with requesters.

can be bewildering at first, but you'll find yourself whizzing through these menus at break-neck speeds.

If you're expecting a DCTV version of *Deluxe Paint*, then you're in for a bit of a shock. Whilst *DCTVPaint* can be used to create pseudo 24-bit images from scratch, it's geared towards the manipulation of existing images. All the usual painting tools are there, but the vast majority have been designed more for touching up images than creating them from scratch. This makes DCTV sound limited, but don't be fooled – this is one hell of a program!

As you'd expect, *DCTVPaint* gives you access to an enormous palette, giving you the chance to create gradients and fills that would put even the best HAM images to shame. What's more, the amount of control that *DCTVPaint* gives you over the way gradient fills are produced is second only to *Deluxe Paint 4*. Even programs like NewTek's excellent *DigiPaint 3* don't come close!



With DCTV the colours produced really are out of this world. Once you've got used to pictures of this quality, there'll be no turning back

24-BIT AND BACK

24-bit images may look very nice, but they're not really that useful unless you can actually do something with them. However, thanks to the way DCTV stores its images, it's perfectly possible to load a DCTV image directly into a program like *DPaint* and play around with it there, although the results can look a bit odd. The best way to utilise a program like *DPaint* is to use it to pull together animations from DCTV images. If you've ever tried to produce a 24-bit animation, then you'll know all too well how big they can be – even a fairly short animation can take up many megabytes – but DCTV is different.

Because its images are stored as 16-colour high res images, it's possible to generate a fairly long animation on an Amiga with little more than a couple of megabytes of RAM. What's more, DCTV animations will run at full speed even on an unaccelerated Amiga – try doing that with Harlequin! For this reason alone, DCTV is a dream come true for anyone involved in desktop video.

But what happens if you want to convert a DCTV image to a standard Amiga image? No problem. Branching off from the main DCTV program is a page called 'Convert' which allows you to do just that – convert DCTV images to standard Amiga images. Convert gives you control over the format of the image, allowing you to convert your DCTV image to anything from 2 to 4096 colours in a variety of screen formats. Output as IFF24 is also possible.

CONCLUSION

It's not very often that a product arrives which is virtually perfect, but DCTV is the exception. The quality of its composite output is hardly up to RGB standards, but that's the price you pay for such a capable system.

As it stands, DCTV currently represents the most cost effective way of getting involved in the true colour revolution. Even if you already own a digitiser, DCTV is amazing value; If you don't, you're unlikely to see such a bargain for a long time.

DCTV may cost more than HAM-E, but the addition of a video digitiser offsets this to a point where DCTV could actually be viewed as better value – after all, if you added a separate digitiser to HAM-E, it would set you back at least £200. Compare the cost of the two systems for yourself and I'm sure you'll agree what great value DCTV really is! AS

DCTV VS HAM-E

With the release of DCTV, Amiga owners on a budget now have two low-cost pseudo 24-bit boards to choose from – DCTV and Black Belt's HAM-E. Both seem to offer pretty much the same, but which is best?

If you compared the same image displayed on two separate Amigas, one running HAM-E and the other running DCTV, you'd probably go for HAM-E because of the sharper images that it produces. However, on further inspection, you'd soon come to realise that DCTV is actually a far more capable system. For starters, DCTV isn't just restricted to displaying images – thanks to its built-in video digitiser, you can grab images in full colour from just about any composite video source.

Another factor to consider is the quality of both units' respective software. There's no disputing the power of HAM-E's *Image Professional* image processing software, but it's hardly the friendliest package to use. What's more, it's damned slow. As for HAM-E's paint program – well, *Deluxe Paint* it most certainly isn't.

On the other hand, DCTV's software is second to none. While it may lack the image processing power of HAM-E, the rest of DCTV's software is powerful and a joy to use. DCTV's paint package is particularly brilliant. Boasting a lovely front end backed up by useful painting tools, *DCTVPaint* is the best thing since sliced bread (excluding *DPaint 4*, of course!).

All of *DCTVPaint*'s features are accessed from a horizontal strip of gadgets which run along the bottom of the screen. Below these gadgets is an empty space which is used to hold any extra adjustment gadgets which are associated with individual painting tools. Click in the freehand draw gadget, for example, and a host of sliders and gadgets appear which enable you to fine-tune the operations of that particular tool. It can be bewildering at first, but you'll find yourself whizzing through these menus at break-neck speeds.

SHOPPING LIST

DCTV ....£TBA
(Probably around £400-£500)
By Digital Creations Inc.
2865 SunRize Boulevard
Suite 103 Rancho Cordova
California 95742 USA

Available from
Silica Systems, 1-4 The Mews,
Hatherley Road
Sidcup, Kent
☎ 081 309 1111

CHECKOUT DCTV

Ease of Use ●●●●○
Everything is icon driven, so even the greenest of users can get stuck in almost immediately. Some of the more complex painting tools take time to master though.

Features ●●●●○
Full TV resolution colour output, a built-in video digitiser and some of the best paint software since *Deluxe Paint* – what more could you ask for?

Speed ●●●●○
Because the Amiga thinks that DCTV images are nothing more than 16-colour IFFs, handling such colourful images has never been faster!

Documentation ●●●●○
Totally top notch! DCTV's manual contains a wealth of information including a large number of tutorials, so it's definitely thumbs up for this one!

Price Value ●●●●○
£500 is a lot of money, but you do get an awful lot. If you tried to get the same system based around a true 24-bit board, you'd be looking at a bill for considerably more!

Overall rating ●●●●○

DCTV currently represents the cheapest way of getting involved in true colour graphics. If you want to push your Amiga's graphics capabilities to their limit but you can't quite afford the likes of Harlequin, then you won't go far wrong with DCTV!

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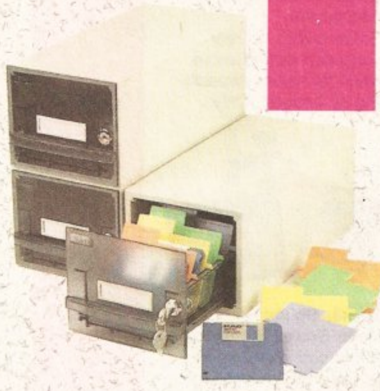
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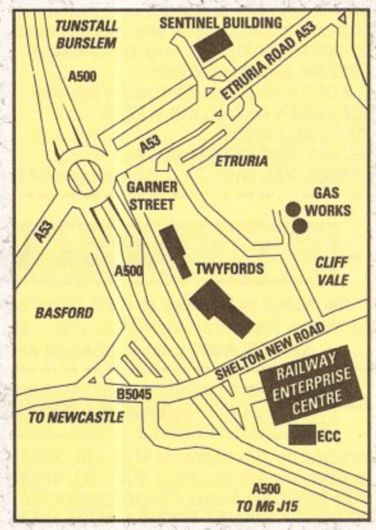
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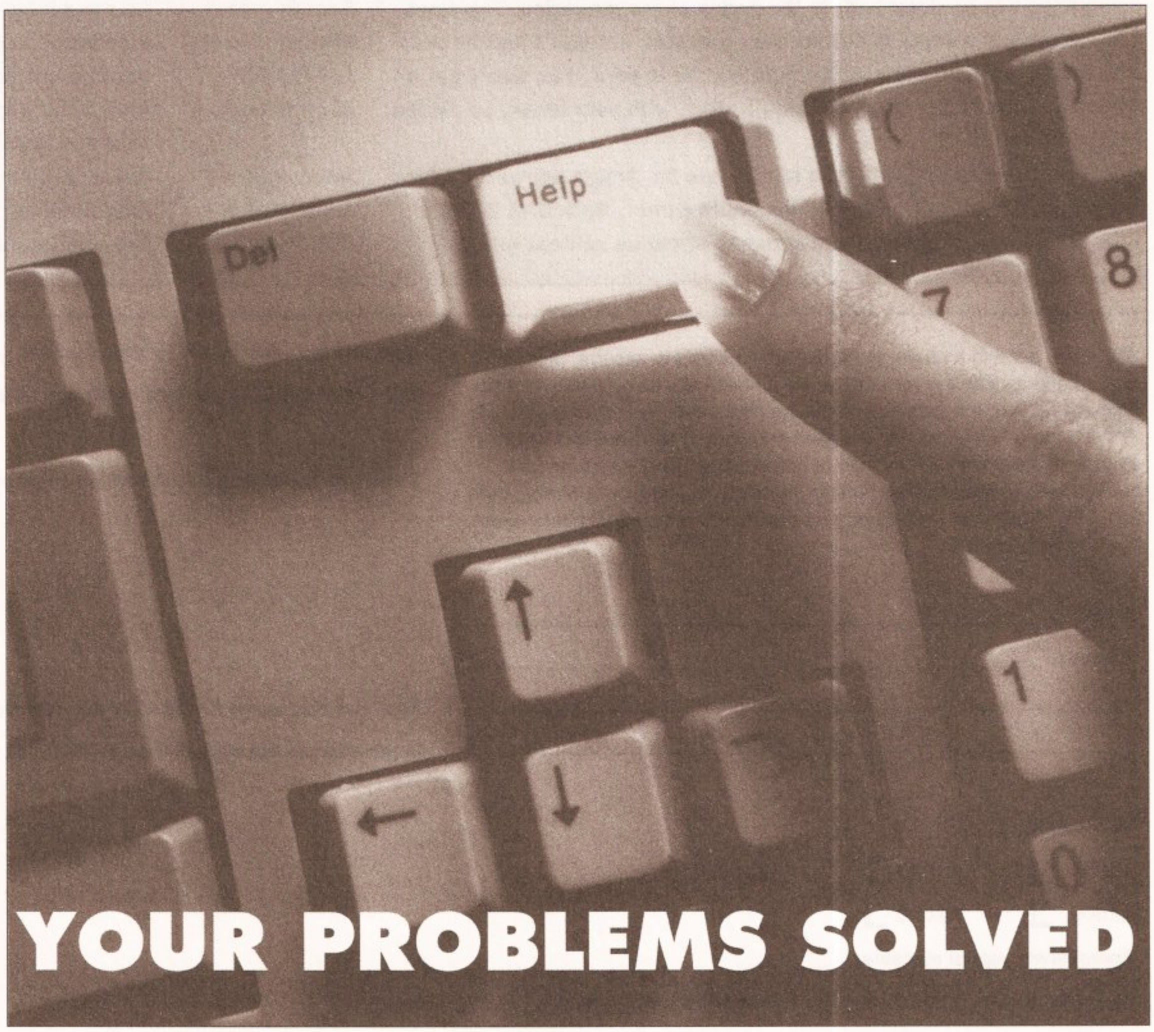
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Caution: be sure that you fully understand the answer before trying it out.

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Buying advice: we use this icon if the question asks us for buying advice.

Printers: this icon denotes a query about printers, printer drivers and so on.

Technical: any queries about programming will have this icon next to them.

Video: this icon relates to any query about using your Amiga with video hardware.

Music: this icon is for questions about MIDI, sampling, synthesizers and so on.

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We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but you'll just have to be a little patient and wait for it to appear in print. You won't get a personal reply even if you enclose an SAE with your letter, so please don't bother.

Send your question on the form below to: Amiga Answers, *Amiga Shopper*, Beauford Court, 30 Monmouth Street, Bath BA1 2BW.

The Amiga Answers panel consists of our consultant editors Mark Smiddy and Jeff Walker – and, of course, our resident deputy editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping whatever the subject of your query.

Each panelist will be dealing with queries in their own specialist area(s) so it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem.

Below is a list of areas of expertise. It's a list that we will add to and update every month, so you will know who to write to about any subjects not mentioned here.

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If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: Amiga Answers, *Amiga Shopper*, 30 Monmouth Street, Bath BA1 2BW. Sorry, but we cannot personally reply to any questions – even if you include an SAE.

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Workbench revision (written on the Workbench disk)

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PCB revision (if known). Do not take you machine apart just to look for this! ________

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Details of any other hardware which could help us to answer your question:

Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

AS 12

DESKJET 500 FONTS



I have a Hewlett-Packard DeskJet 500 printer which I use with *ProWrite*, *PenPal* and *Wordworth*. While graphics printing is satisfactory with the first two, they won't print the internal Deskjet 500 fonts Times and Helvetica, and I see no way that they will ever do so using the HP_DeskJet driver supplied with my Amiga. However they do print the two default Courier fonts.

When it comes to *Wordworth*, this will print only Times and nothing else, not even pictures.

I assume that this is due to the vagaries of programs and printer drivers, but I would like your advice as to whether the internal fonts of the DeskJet 500 can be accessed and used easily with programs other than those associated with the PC.

SW Waldron
Newport
Gwent

The latest version of *ProWrite* (3.2) has a Printer Font Number gadget in its Print requester to enable you to switch between internal printer fonts, although this will only work if the printer driver you are using supports this feature. I'm pretty sure that the HP_DeskJet driver on the Extras disk does support font numbers – even if it was written some years ago now for the original DeskJet – but you can get more modern drivers from *JAM* on ☎ 0895 274449.

Version 1.1 of *Wordworth* will let you mix and match internal DeskJet 500 fonts in the same document. Looking at the disk I can see it has support for Times, Courier, Elite and Gothic. I suggest you contact Digita on ☎ 0395 270273 and talk to someone about upgrading.

Wordworth almost certainly isn't printing pictures because that old HP_Deskjet driver doesn't work properly with the DeskJet 500. ***JW***

VOICE SYNTH



I have no voice editing software for the FB-01. I do own *Music-X 1.1* but this does not include an FB-01 protocol or editor. I have managed to download a bank of sounds using one of the generic protocols in *Music-X* but I can then only view the sounds in the generic editor which displays hexadecimal. Do you know of a way I can write my own FB-01 protocol for *Music-X*? At least that way I could keep a library of my sounds in *Music-X*.

I know of two commercial voice-editing packages, Dr T's *4-Op Deluxe* and Blue Ribbon Soundwork's *PatchMeister*, which support the FB-01. Both cost about £80, so I was wondering if you knew of any FB-01 voice editors in the public domain. If not then I will have to buy one of the commercial packages. Which is best, and, as *PatchMeister* is by Blue Ribbon Soundworks, will I need *Bars&Pipes* to run it?

Paul Howlett
Southampton
Hampshire

The general plan for creating protocols is given in the back of the *Music-X* manual. I am sure however that someone, somewhere, must have written a Yamaha FB-01 protocol already because when first introduced the FB-01 expander was very popular. Having said that I've not been able to find any references to this sort of data and from the stories I've heard there looks as though there could be hidden problems with the use of some of *Music X*'s protocol facilities anyway.

I'm afraid I do not know of a public domain FB-01 editor but as far as commercial editors are concerned the two you mention would make your voice-editing life a lot easier. *PatchMeister* is good and you don't need to use it in conjunction with the *Bars&Pipes* sequencer. I've used a couple of the Dr T editors (including *4-Op Deluxe* with a Yamaha TX81Z expander) and since this program supports the FB-01 there's no doubt this would be the cheapest commercial software option.

The snag here is that your FB-01 will not last for ever – when you change expanders your editor will then become obsolete. OK I know that *4-Op Deluxe* does support a few other synth/expanders but it is still Yamaha specific and works only with the Yamaha TX81Z, the FB-01 and the DX100, DX27 and DX21 units.

The ideal long term solution to this obsolescence problem is to go for a universal editor. *PatchMeister* is one solution, but Dr T's *XOR*, which can be used with the FB-01, is the editor I would recommend because it already supports around 120 synthesizers/expanders. *XOR*'s disadvantage is its price (£219) but this package could turn out, in the long run, to be the most cost effective pathway. Once you've changed synthesizers, or added a couple of other expanders to your MIDI set up, the cost of buying extra 'instrument specific' voice-editor programs would soon mount up. ***PAO***

VGA GRAPHICS GRAPPLE



I have tried to use an SVGA graphics card (VG2000) with the XT bridgeboard but I have been unable to get it to work properly in monochrome and not at all in colour. Can you please tell me what I must do to get colour and where I can get a manual on the XT Bridgeboard. Is it possible to autoboot from my hard drive?

M Bowles
Kirdford, W Sussex

First, make sure that you have an 8-bit VGA card and not a 16-bit VGA card. Only 8-bit cards will work with the XT Bridgeboard, and most SVGA cards are 16-bit (for AT-type computers). You will also have to change a jumper on the XT Bridgeboard and run the Bridgeboard setup software to configure the card.

New manuals can be obtained from CPC Components on 0772 555034. You can autoboot the PC, but not the Amiga from a Bridgeboard hard disk. ***JR***

FEED THE POET



I use *Wordworth 1.1* with the original document layout settings except that I've changed the paper type from US Letter to A4 Letter.

If I create a document and print it out on my Star LC24-200 printer, using the EpsonQ driver, the print on the paper begins at 4.6cm from the top of the paper. If I decide to print another copy the print begins at 7.2cm. This carries on with the top of the third copy at 9.7cm, the top of the fourth copy at 12.2cm, the top of the fifth copy at 14.8cm.

This, as you can imagine, is very annoying and the only way I have rectified this is by turning off the printer and then turning it back on when I want to do the next copy.

How do I overcome this problem so that each copy starts at the same place without having to turn the printer off and on? Also, I want to design a letterhead using *Deluxe Paint II* and incorporate it in my letters created using *Wordworth*. Is this possible? If so, how do I do it?

Barry Fulbrook
London N5

I get quite a few letters about this problem of pages starting further from the top of the page each time, not just from *Wordworth* users but from people using all kinds of word processors.

It helps if you understand what's going on. The A4 page you create on-screen assumes you are going to print from the very top of the paper to the very bottom. Any top and bottom margins specified, although they may contain no text, are also printed – a one inch top margin, for example, at the normal six lines per inch, is sent to the printer as six line feeds; the same goes for bottom margins. Both margins are included in the total page length, so if they are both one inch your total printable length is reduced by two inches.

Now, if your printer creates its own top margin because of the way the paper feeds in, there's no way that the full A4 page can be printed on that piece of paper, so whatever part of the page is left unprinted, when the paper feeds out, gets 'carried over' and printed on the next sheet of paper. Unless you switch the printer off that is, in which case the 'carried over' data gets lost.

In your case the 'carried over' data is a few line feeds which belong to the bottom margin of the previous page you printed.

Because of your preciseness in telling me your word processor settings and the exact measurements involved, I can quickly see that your printer is imposing a three-quarters-of-an-inch (2cm) top margin – *Wordworth*'s default top margin is one inch (2.6cm), yet your text starts one-and-three-quarters-of-an-inch (4.6cm) from the top.

So reduce your page height by 2cm and everything should work as expected. If you want the top line to start nearer to the top of the page, reduce the top margin value as well. If you feel the printer-imposed three-quarters-of-an-inch is enough of a top margin, select the Skip Top Margin button in the Print requester. In fact,

JARGON BUSTING • JARGON BUSTING

Font – The group of letters, numbers and special characters that comprise one variation of typeface, eg: 12pt Times, 12pt Times Bold, 12pt Times Italic.

Hexadecimal – A number format in which each digit can have one of sixteen (instead of the more usual ten) values. Digits above 9 are represented with the alphabetic characters A-F.

Printer driver – a program that sits inbetween any applications program producing output and the printer. It converts codes describing text and graphics format into a form suitable for a specific printer.

VGA – Video Graphics Array. High resolution colour or monochrome graphics system for the IBM PC.

Voice – A collection of data defining a sound waveform for a synthesiser.

if you do this you may not need to alter the page size as this will reduce the page size by one inch.

Some printers can't print right to the bottom of the page (although yours can) because they automatically sense the bottom of the paper and need a bit of it for themselves in order to feed the sheet out. Often this 'paper-out sensing' can be switched off via a dip switch or command issued through the command panel – check you manual about this.

If your printer can't print right to the bottom of the paper you'll have to reduce your page height by about another 1-2cm to allow for this. Or, if you are using *Wordworth*, you could try selecting the Form Feed button which will send a form feed at the end of the text on the page instead of however many line feeds are required to 'print' the bottom margin.

One final thing to check is that your printer is set up for 12in paper (or A4), not 11in. Many printers default to 11in paper and need a dip switch flipping (or a command issued from the command panel) to set them to 12in. Once again, check your manual.

As for designing a letterhead and incorporating it into your *Wordworth* letters, simply use *Deluxe Paint II* to design your letterhead, save it to disk and then import it into *Wordworth* using Place Picture from the Utilities menu. I see you have only 512k of graphics RAM and 512k of expansion RAM, so keep to two or four colours to save on memory usage. If your *Deluxe Paint* letterhead or logo is smaller than a complete screen, cut it out and save it as a brush; again, this will use less memory when importing into Wordworth. ***JW***

SAMPLE OF C



If I sample the middle C note of a piano at a sample rate of say 8386, for example, then play it back at 8363 samples/sec, I will obviously hear the sound of middle C. My question is what formula or algorithm can I apply such that, to play it back at 8363 samples/sec, I can get a different note, say an E note?

I am trying to do what the RESAMPLE function in the Tune Waveform menu of *AudioMaster* does. I am programming in Amiga Basic and C, and know how to load and play SV8X sound samples.

By the way how does the sound quality of an Amiga connected to the Sound Enhancer (by Omega Projects) compare to that of an Amiga with its low-pass filter off? Is it better? Also, in your opinion, which is the best Amiga amplifier – ZY-FI, Sound Blaster, or the Trilogic MiniAmp 5?

Chee Chong Hin
Cottingham
North Humberside

If your only reason for re-sampling is to change the final pitch of the sample being played then you don't need to do it anyway – you just alter the period data used for the waveform. Have a look in the Amiga Hardware manual for the various formulae, restrictions etc. Another book which is likely to be useful to you is *Making Music On The Amiga* (it's published by Abacus and available from DTBS Books on ☎ 0706-524304). The Abacus offering provides useful Amiga Basic and GFA Basic advice and it also provides formulae and example programs.

If you are seriously interested in general signal processing techniques (including sampling frequency changes on complex waveforms) then get down to your local library and ask them to get you a copy of *C Language Algorithms For Digital Signal Processing* by Paul Embree and Bruce Kimble. It's published by Prentice Hall and the ISBN is 13-133406-9. Be warned though – it involves some very heavy maths and provides even worse bedtime reading than the *ROM Kernal Manuals*.

As far as your last questions are concerned: The Sound Enhancer's performance will vary according to the amp/speakers being used but with most set-ups you will notice far more improvement than that obtained when switching out the low-pass filter.

Amplifiers? I'm not that keen on any from your list but, having said that, all will sound much better than the Amiga monitor's internal speaker. If pushed I suppose that I'd tend to come down in favour of the MiniAmp 5. ***PAO***

JARGON BUSTING • JARGON BUSTING

Crunch – A method of compacting programs and data so that less storage space is used on a disk. When a crunched program is loaded into memory it automatically de-crunches itself into its full, functioning size.

Fractals – Are patterns created by the constant repetition of a simple shape at smaller and smaller scales. One example is a triangle with smaller triangles on each of its sides, with smaller triangles on each of their sides, with smaller triangles...

Guru – A message from the Amiga system saying that a fatal error has occurred. The message appears in a large, flashing red box and includes two numbers which are of use to programmers trying to ascertain why their programs have failed.

Low pass filter – Something which allows low frequency sounds to pass through unmolested while reducing the volume of higher frequency sounds in proportion to the pitch.

Sample – A digital – computerised – representation of a sound. A sample can be sent through a digital to analogue converter (the Amiga has four of these) and be heard as sound. Changing the speed at which the sample is played back changes the frequency (or pitch) of the sound.

Startup-sequence – A program which is executed every time the Amiga is switched on and after every reset. It sets up the system so that it is usable from Workbench, and may be customised by those who have unusual hard or software requirements.

SCRIBBLE! GETS DOWN



I use *Scribble!* on a 1Mb Amiga 500 with an Oki Microline 380 24 pin printer.

Using single sheet feed or continuous form, the top line of print moves progressively down the page when more than one page is printed. I realise this is to do with the way the printer is set up, but no matter how many combinations of printer preferences I experiment with this annoying fault continues.

I am printing on A4 paper using a Courier font with a pitch of 12 characters per inch and a spacing of six lines per inch. On the Workbench Printer Preferences I have set the page length to Custom, with 70 lines.

D Watkins
Chandlers Ford
Hampshire

See the answer to the letter entitled 'Feed the poet' for an explanation of what is happening. Change your page length within *Scribble!* to between 64 and 66 lines (Preferences/Page Setup/Page Length) and the problem will disappear. It did for me at least.

This *Scribble!* Page Length figure will override the Workbench Preferences value for page length, but once you've found the correct value it'll do no harm to adjust that value as well. ***JW***

WORKBENCH WORRIES



I am thinking of putting together a customised version of Workbench but I need to know the following:

a) Is it possible to load all the programs that I require while Workbench is booting to avoid any loading when it is in use?

b) Can I use the PD program *Imploder* to crunch files and/or disks and then use *PPMore* to read text files?

c) How do you use *PPMore* and *VILBM* from an icon?

d) How do I load programs using the startup-sequence?

e) Using the startup-sequence, how can I make it load and play sampled speech and show a picture whilst the main body of Workbench is loading?

f) How do you attach an icon to an animation? Would I need something like *PPAnim* or *ShowAnim*?

g) Which memory expansion do you recommend for my A500? I've been looking at a few and I've narrowed my list down to the Cortex unit and the SupraRAM 500. Whichever I buy, I will need at least 2Mb.

h) Which PD fractal generators do you recommend? I want to be able to produce both landscapes and normal mandelbrots and Julia sets.

i) Using AMOS, I'm trying to write a sort of *Galaxians*-type game and I need to have waves of aliens swooping down towards a ship at the bottom of the screen which can fire missiles. What I need to know is how do I display several aliens on the screen at once, moving them all using AMAL and how do I get the player's ship to fire missiles and register a collision when they hit an alien?

j) Which is the best way of getting financial recompense from a game? Which is best, licenseware or shareware?

Daniel Morgan
Sidcup
Kent

a) You certainly can load programs from the startup-sequence, but this isn't a very practical thing to do if you only have 1Mb RAM. Something like *DPaint* or AMOS require a hefty chunk of RAM which simply isn't available on a 1Mb machine. OK, you can load them individually, but try loading several at the same time and you'll soon run out of valuable RAM.

It's best to restrict this kind of thing to smaller programs – and even then you should only install a program if you really need to. I've got 9Mb of RAM inside my machine and the only programs that I load during bootup are Timm Martin's *SID* and a virus killer. I could quite easily have

pulled in several very large applications but the time it would take for the machine to boot up would be unbearably long – even on a hard disk based machine!

If you still want to continue with your idea, then the CLI-command you need is RUN. This clever little command allows you to launch any program as a child-process, therefore leaving the machine to continue with the StartUp-Sequence even while the launched program is running. Better still, try and get your hands on a copy of a PD variant of RUN called *Runback*. *RunBack* will do the same job only much, much better.

b) If you're intending to squeeze a few extra programs on to a standard Workbench disk, then you will need something like *Imploder* to crunch the disk's contents to make room. *Imploder* isn't a bad little program, but a better program for the job is *PowerPacker Professional* which is available from Softville PD. *PowerPacker* has virtually established itself as something of a standard, so you'd be much better advised to use this instead.

c) The easiest way is to simply click once on the *PPMore* or *VILBM* icon and then press the SHIFT key and double click on the file you wish to view.

d) The startup-sequence is really nothing more than an automated CLI which executes various commands in the same way as a programming language. To load a program, all you would have to do is to add the filename of the program to the startup-sequence on its own line – ie, to load *DPaint* you would enter the command 'DPaint'. Easy really.

e) You'll need two programs – a picture viewer and a sampled sound player. These are ten a penny in the PD libraries so just contact your nearest and dearest PD supplier and ask them for the appropriate disks.

f) Adding an icon to an animation is simple as long as you know the CLI fairly well. All you need is a 'Project' icon like the ones attached to pictures saved out by *DPaint* (the framed picture of a mountain range). All you do is to copy the icon file (the file that ends in .info) across into the same directory as the animation and then rename it so that it is attached to the animation – eg, if the animation is called 'Dog', you would rename the icon file 'Dog.info'.

To display the animation, you will need a tool like *ShowAnim*. Copy ShowAnim into your C directory and then modify the animation icon's default tool so that it reads 'C:ShowAnim'. This can be done by clicking once on the icon and then selecting 'Info' from the Workbench menu on the Workbench (2.0 users must select 'Information...' from the Icons menu). You will then be presented with a window containing all sorts of useful information concerning the file that the icon is attached to. To get the icon to load ShowAnim, you must change the 'Default Tool' field so that it reads 'c:ShowAnim'. Once this is done, click on 'Save' and the animation will then load from an icon.

g) My personal favourites are the Cortex range manufactured by Cortex Design Technologies. They make a range of expansions ranging from a 2Mb unit for £240 to an 8Mb unit for a very reasonable £480. What's more, they come complete with a passthru connector, so you could still add a hard drive at a later date. Cortex is on % 051 236 0480.

h) For Mandelbrots and Julia sets, I'd recommend *MandelVroom*. For fractal landscapes, I still like *Scenery*. Both are available within the Fish collection of disks.

i) Well, for a start I'd advise you to use blitter objects rather than sprites. A game like *Galaxians* doesn't require a tremendous amount of speed, so Bobs will do the job perfectly well. What's more, you can have a lot more of them onscreen at once.

By default, you can display up to 63 Bobs onscreen at once simply by using the AMOS 'BOB' command. An addition parameter allows you to specify which image is to be assigned to the Bob from the sprite bank.

For example, if the bob image for your aliens was at position 1 in your sprite bank, all you would have to do is to enter the following four commands to display four Bobs with the same image data. Good, eh?

```
BOB 1,100,100,1
BOB 2,200,100,1
BOB 3,100,200,1
BOB 4,200,200,1
```

Obviously you've only got a limited number of AMAL channels available to actually move all of these aliens, so you must get around this limitation by cheating. Because the aliens attack in a wave, they all move in relation to each other, so you could easily assign an AMAL channel to a single Bob and then write a bit of code which tells the other Bobs to get their position data from that Bob offset by a number of pixels. This way, all the position checking can be handled by AMAL, leaving your program to run at full pelt. This is not a perfect solution, but it'll work.

To get the player's ship to fire a missile, create a new hardware sprite each time the fire button is pressed and move it under AMAL until it hits something. Collision detection between a Bob and a sprite is nice and simple – just keep checking the value returned by the 'SPRITEBOB COL' command until it returns a value of –1. You then check the status of each bob using the 'COL' command to find out which ship the missile has collided with.

j) I'd go for licenseware as it guarantees you a fixed payment of £1 for each disk sold. You could get more from each user using shareware, but you've got no guarantee that everyone who buys your game will pay the shareware fee. ***JH***

MEMORY LAME



I am at my wits' end. I bought *Pen Pal* at the same time as I bought my Amiga. It's a 1.3 machine with 512k graphics memory and 512k expansion memory.

I cannot use it for graphics printing. Everything is perfect in text print but when I print in Amiga graphics I get a perfect print and then the machine crashes with a Guru message, meaning I have to re-boot and re-load the program for each page of my document.

I am using a BJ-10e printer driver, but the same thing happens if I use the Canon 48 driver.

I have tried every combination of settings and have to have the paper feed on continuous otherwise I have the problem of a zero printing at the top of the page. I have run *Pen Pal* on somebody else's Amiga using my BJ-10e printer, and the same thing happens so it...

P Kovacs
West Molesey
Surrey

I'll stop you there, Mr Kovacs, even though you kindly took the time to supply me with lots of other details. Your problem is a lack of memory.

To create an A4 sized bitmap at 360 dots per inch (dpi) – a bitmap is a representation of the graphic, in this case the whole page, created in memory, after which it is sent to the printer – which is what *Pen Pal* and the printer driver are doing between them, requires lots of memory, especially if there are multi-coloured pictures and large fonts on the page.

Depending on how many pages you have in your document, and how much memory they take up, you may very well be able to print them at the lower resolution of 180 by 180 dpi (Density 4), which requires only a quarter of the memory that 360 by 360 dpi does.

There are certain things you can do within *Pen Pal* to free as much memory as possible. In the System/Preferences/Program requester, over on the bottom right where it says Pen Pal Buffer, Select the Fast button and change the Percent To Use value to the smallest possible, which is 10% on my version of *Pen Pal*. While you are there, over on the bottom left where it says Close Workbench?, select Yes. And in the middle where it says Display Mode, select Normal.

Save these settings. You'll have to quit *Pen Pal* and re-load for them to take effect.

The number of fonts in your FONTS: directory will also affect memory usage, even if you haven't actually used them in the document, so prune your fonts to the bare minimum required for your document.

If after trying all these tricks you are still crashing, the the only answer is to buy some more expansion memory. ***JW***

GUITAR HEROICS



I recently bought a Technosound Turbo for my Amiga. Even more recently I started learning to play electric guitar. While experimenting I found that if I connected my guitar amplifier to the sound input of the Technosound I could play my guitar through the computer. This was good news as I felt I could record a backing track and play a solo to it. Then came the big disappointment – I can only record for about 30 seconds before running out of memory. What I would like is a program that would let me play and save a whole track.

I have a further problem: I have a Yamaha PSR 47 MIDI keyboard and have bought a MIDI interface from Datel but I'm nervous about connecting it up as there are no instructions. Also what does it do?

D Cussell
Margate
Kent

It is not your software that is the limiting factor; it is simply that large sound samples, which is what you are creating by sampling your guitar in this way, use a *lot* of memory. There's no program that can get around this as such and systems that can sample directly to hard disk, which is ideally what you need for whole-track sampling, are expensive.

A MIDI interface for an Amiga is quite a simple affair which plugs into the Amiga's serial port. Its basic purpose is to provide suitable signal characteristics, the signal opto-isolation and the right physical MIDI connections (ie a MIDI-IN, one or more MIDI-OUTs and usually a MIDI-THRU DIN connector). Datel make two interfaces both of which take their power directly from the Amiga. When a sequencer program runs it sets the serial port up for collecting MIDI data and then monitors the port collecting any data that arrives at the interface's MIDI-IN terminal. If you

take a MIDI lead from your synthesizer's MIDI-OUT terminal and connect it to the MIDI-IN on the interface the sequencer program will be able to read the MIDI messages that your synthesizer transmits. In a similar fashion any MIDI data that you record and replay with the sequencer program will appear at the interface's MIDI-OUT terminal – if you have connected a lead from this terminal back to the MIDI-IN of the synth the synthesizer will play by itself as it receives MIDI messages transmitted by the sequencer program.

There's nothing difficult about using a MIDI interface – basically you just plug it in, connect up the appropriate MIDI leads, and forget about it. Most people do however suggest that you plug in the interface, and the necessary MIDI leads, *before* switching on and loading up your Amiga sequencer program. One thing you do need to check is that the sequencer does not default to echoing its MIDI input data – some Yamaha synths, and I'm not sure whether yours is one of them or not, use a non-standard MIDI-OUT terminal that echoes incoming data as well as transmitting the data generated by the synth – this can cause MIDI closed-loop problems until the sequencers echo-thru option has been disabled. Your synth and sequencer manuals should provide all the necessary info. ***PAO***

IBM COMPATIBILITY

I would like to know if it is possible to convert the Amiga 500 to IBM compatibility with hard disk, if so approximately how much would it cost, where would I get the best buy from and will it make any difference to the performance?

Patrick Neale
Nuneaton

Yes, there are several ways to make your Amiga run IBM compatible software. Firstly there is the KCS Powerboard; this is the slowest of the emulators on offer but comes with 1Mb of memory. It costs around £220. The Vortex AtOnce board is a faster emulator, but requires opening your Amiga 500 to fit internally, voiding the guarantee. It costs around £190. With either of these you will need to buy an Amiga hard disk to use with the emulator, the KCS will only work with some hard disks such as the Commodore A590, the Vortex AtOnce will work with all Amiga hard disks.

Possibly the best solution is the excellent GVP series II hard disk for the Amiga, which for £399 gives you a 52Mb hard drive and room to expand up to 8Mb of memory. You can then fit the optional GVP AT emulator inside the GVP hard drive (£299) to provide IBM compatability and a hard disk in one box. Check through the advertisers in this magazine for the best prices. ***JR***

Because of the width of the columns, we occasionally have to break listings across two or more lines. Where this has occurred, and you should enter two or more lines without a [Return] between them, we have used the following symbol: ↲

WELSH ACCENT

Accents can be placed over a,e,i,o,u by using the [Alt] key plus f,g,h,i,k. In Welsh the use of accents is also desirable on w and y, particularly the caret.

Can the w and y keys be made to work with the [Alt] keypresses to produce the caret by using [Alt]-w? If not, is there another way?

E Evans
Llangennech
Dyfed

Oh I see, it's 'guess the word processor I'm using' time again, is it? Ha ha! You can't catch me that easily...

... an hour passes ...

Got it! It's *Pen Pal* you're talking about. You could have saved me a lot of time, Mr Evans, if you'd told me that to start with.

Anyway, the answer is no, *Pen Pal* will only put accents over characters it knows have accents over them, and these will correspond to characters in your printer's internal font or fonts, which won't include a w or y with a carat over it.

The only thing you could do is use the Fed font editor on the Extras disk to design a font with your Welsh accented characters and use Graphics print instead of Text print, but the quality of the printout will be greatly reduced. ***JW***

AREXX RULES?

Having programmed extensively in Basic on the Amstrad CPC 464, I looked forward to programming using ARexx which is supposedly supplied with my new Amiga.

To my dismay I could not find it on my disks although I did come across a program runner called *RexMast*. Is the ARexx language supplied or should I look to AMOS for a good programming language? Also, if it is supplied how do I load it up? The manuals that came with my machine give no help at all.

Alex M MacIver
Isle-of-Lewis
Scotland

ARexx is provided with Workbench 2 – that *RexMast* program which you found is the ARexx resident process. The bad news is that Commodore does not provide the full ARexx package *nor* do they provide any language documentation.

The only way you can get the full ARexx environment at the present time is to buy it as a separate package. There are some advantages to doing this anyway because, as you've already discovered, Workbench 2 users have been given the minimum of ARexx support.

Buy ARexx separately and you will get full documentation, the supporting header files, run-time and link-time libraries, utilities, and plenty of example ARexx programs. The ARexx package even includes developers' information for the design and implementation of ARexx interfaces.

The complete ARexx package costs £39 and is available from The Amiga Centre Scotland (☎ 031 5574242). ARexx on the Amiga has been brilliantly implemented but I think that it's fair to say that a lot of would-be Amiga ARexx programmers are going to be intimidated by some of the more technical material provided with the full ARexx package. In this respect AMOS might, if you are hooked on Basic style languages, prove to be a somewhat easier pathway to follow. ***PAO***

JARGON BUSTING • JARGON BUSTING

Hard drive – Like a floppy drive, but much with a much greater storage capacity and much greater speeds for the storage and retrieval of information. The disk inside a hard drive cannot be removed, so once the disk has been filled, it's either time to delete excess files or get another one.

IBM – International Business Machines. IBM revolutionised the home computer market with the introduction of the IBM Personal Computer, known as the PC. Since then, many other manufacturers have marketed PC-compatible computers. PCs and compatibles are now accepted as the industry-standard small business computer.

MIDI – Musical Instrument Digital Interface is a standard devised by electronic instrument manufacturers, allowing a number of synthesisers to be controlled by a single keyboard or sequencer. A MIDI interface for the Amiga works by plugging into the serial port.

Sequencer – A piece of software on a computer (or sometimes built into an electronic keyboard) which stores musical scores and transmits this information in real time via MIDI to synthesisers which will then play it. Some sequencers have the facility to receive and memorise MIDI information from a music keyboard so that music can be entered 'live' instead of note by note.

Basic – Beginners' All-purpose Symbolic Instruction Code. Originally designed as language to teach people the fundamentals of programming, Basic has become the most popular programming language for the home computer. Various extensions to the original language have meant that Basic now offers many powerful features.

LEARNING TO PROGRAM

I would like to learn a computer language and would be grateful if you could recommend a book or package that is aimed at complete beginners rather than those that assume you have already learnt Basic (or something else) and therefore have an understanding of the fundamentals of computing.

Is C a good starting point?

In relation to hard drives, once the drive is full can you erase it or, if you need to keep the information on it, can you take out the disk inside and replace it?

What exactly does an AT Bridgeboard do?

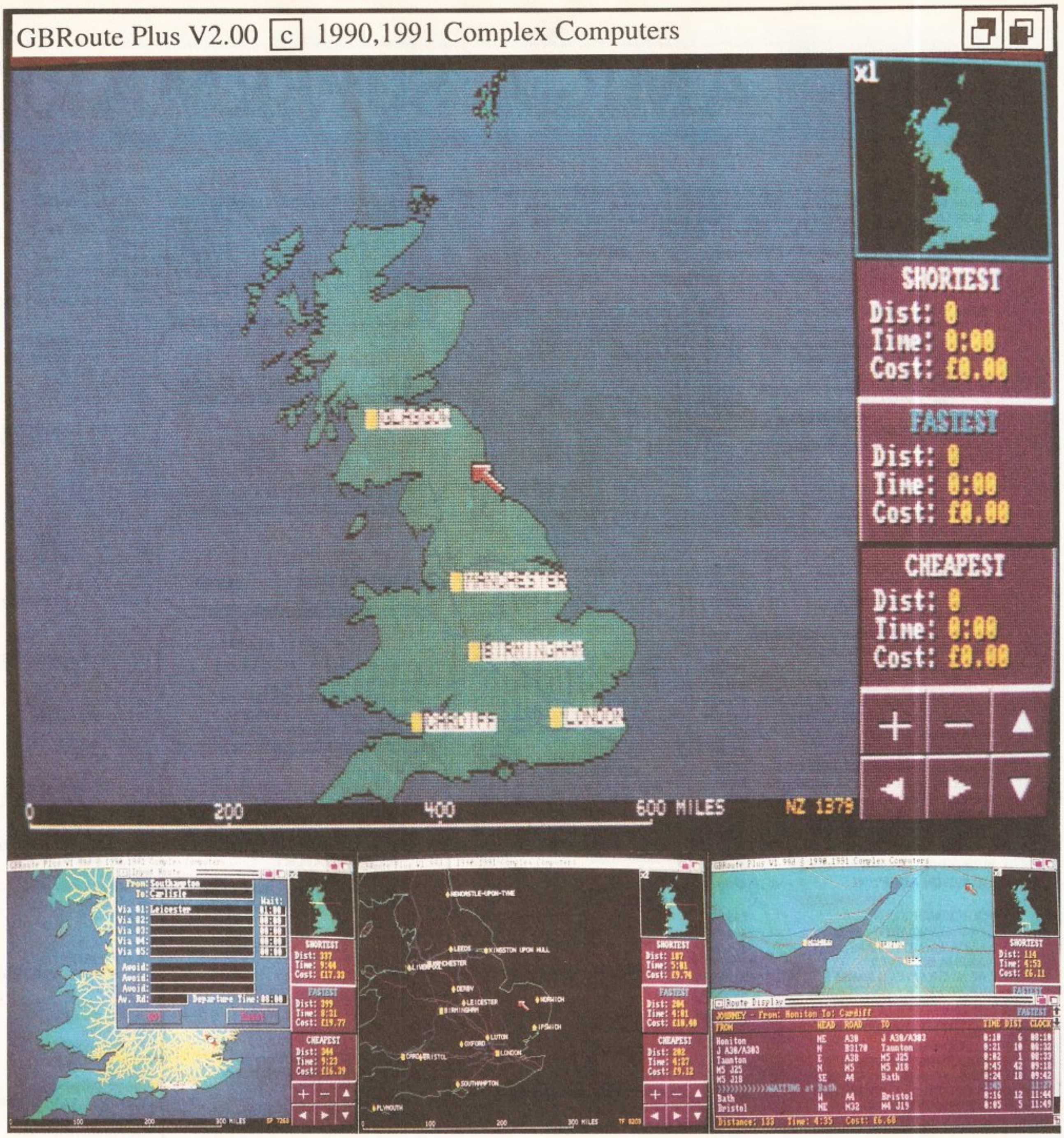
Barry Fulbrook
London N5

If you have absolutely no previous knowledge of computer programming, then I envy you because you have a long and rewarding adventure ahead of you.

There's no easy way to learn and there's no single book that will teach you. Diving straight into C would be a brave (and expensive) thing to do, although learning that language ought to be your ultimate aim. Many 'real' programmers would advise you to keep well away from Basic because this language tempts you to write unstructured programs; they are not wrong. However it is possible to write structured programs in Basic provided you resist the temptation to use the GOTO keyword.

My recommendation is that you run down to your local library and find

continued on page 52



GBRoute Plus

Route Planner for the Amiga

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GBRoute Plus for the Amiga computer has been carefully designed to assist the United Kingdom motorist plan easily and efficiently journeys almost anywhere in the UK. GBRoute Plus will not only find routes but will also cost, time and distance a journey in a matter of seconds, allowing the user to then print out a route or graphical map in either black and white or colour. There are many other features within the software designed for ease of use many of which allow the user to customise the program to suit the individual driver.

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R

continued from page 48

out if there are any computer programming courses you can enrol in at a night school. In the long run this will work out cheaper than buying piles of books that almost always (as you say) assume you have an understanding of the fundamentals. Learn about the fundamentals at night school, then worry about books.

Moving on to your other questions, hard drives can be thought of as massive floppy disks – you can format them, write files and delete files just as you can with floppies. And, put in a nutshell, an AT Bridgeboard allows an Amiga 1500/2000 to become a PC. For the Amiga 500 (which you have) there are two PC boards available, the KCS Power Board and the Vortex ATOnce. ***JW***

AMOS JERKS



I have been programming in AMOS for two months now. I find that when I put an AMOS program in the startup-sequence and another program after the programs jerks badly. I have tried many ways to solve this but keep coming up against brick walls. Also do you know how to do cycle bars with all colours available? Lastly, do you know any possible way of loading an AMOS program from the bootblock? I have AMOS 3D and compiler.

A Venn
Burnley

The problem with your AMOS is probably due to the compiler options. By default AMOS will compile to a CLI application that runs in the background. If you compile a program called WOMBAT.AMOS and run the program WOMBAT from CLI, and you press Amiga-A to return to Workbench, you will find the CLI prompt has returned and you can type in further instructions. This will mean that the second program in your startup-sequence will execute immediately after your AMOS program has begun to run, and won't wait for the AMOS program to finish.

To get around this, compile the program to a WB (Workbench) program rather than a CLI program. This will work fine from CLI (or from your startup-sequence) as well, but it will have the added advantage of waiting for the end of the program before running the next command in your startup-sequence.

Try this fragment of code for colour bars:

```
Set Rainbow 0,0,540,"","",""
Z=0 : AD=1
While Z<512
   LP:
   MR=Rnd(16) : MG=Rnd(16) :↵
MB=Rnd(16)
   If MR+MG+MB<14 Then ↵
Goto LP
   For G=1 To 15
      TR=G/16.0*MR : ↵
TG=G/16.0*MG : TB=G/16.0*MB
      Rain(0,Z)=↵
TR*256+TG*16+TB
      Z=Z+1
   Next G
   For G=15 To 1 Step -1
      TR=G/16.0*MR :
TG=G/16.0*MG : TB=G/16.0*MB
      Rain(0,Z)=↵
TR*256+TG*16+TB
      Z=Z+1
   Next G
Wend
Paper 0
Cls
For G=1 To 256
   Rainbow 0,G,0,255
Wait Vbl
Next G
```

I'm sorry, but there isn't an easy way of putting an AMOS program onto a boot block without diving into horribly complex assembler listings. ***JR***

JARGON BUSTING • JARGON BUSTING

Assembler – A program which converts an assembly language program into the machine code numbers that the Amiga's 68000 processor understands. Assembly language programs are fast and memory efficient.

Boot block – The first two sectors of an AmigaDOS disk located at track 1, side 0. The boot block is used to describe the filing system in use and can contain a special program to 'boot' (load and execute from a reset) certain disks. This is how most simple viruses get into the system.

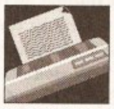
Compiler – A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. A compiled program is generally much faster than its interpreted equivalent.

IFF – Interchange File Format is a means by which data from different graphics or sound sampling programs are saved in a compatible way. It enables data to be exchanged between programs very easily and avoids the situation on, say, the PC in which dozens of different graphics packages each save data in incompatible formats.

RAM – Random Access Memory, so called because any part of it can be accessed immediately, rather than having to search through from the start of memory to the point of interest. RAM is used to hold programs while they are being executed and temporary data.

SIMM – Single Inline Memory Module, a collection of RAM chips in a

OKI HOKEY-COKEY



I want to buy a printer for around £200 and a friend has an Oki Microline 294 18-pin dot-matrix wide carriage colour printer to sell. Only I'm having trouble running it – no user manual. I do have a reference manual, but I am having trouble understanding most of it.

I have copied the driver Okidata_92 on to Workbench and *Deluxe Paint II* but get very bad results, such as gaps in letters from *NotePad* and a software failure from *Deluxe Paint*. Is there a driver that will use the printer and software to their full potential?

If not, can you recommend a 9-pin dot-matrix for around £200, colour if possible, that will work with the minimum of effort and technical knowledge?

Ciaran McCann
Belfast
Northern Ireland

The only Oki ML294 printer driver I know of comes with the *TURBOprint Professional* package, which costs about £50. But with a top resolution of only 120 by 144 dots per inch, even with a proper printer driver you can't expect high quality printouts from the ML294. The 9-pin Star LC-200, which costs about £200, has a higher top resolution of 240 by 144 dots per inch and there is a driver called *Star9Plus* available for this for the cost of a shareware Jamdisk (£2) from Just Amiga Monthly on ☎ 0895 274449. ***JW***

FORGING FONTS



I have some sets of alphabets that have been created with *DPaint III*. Is it possible to turn these IFF pictures into proper fonts. If so how is it done?

N Browett
Stoney Stanton
Leics

It would certainly be feasible to write a program that could isolate the necessary font data from the IFF brush of an individual character. It would then be possible to use a set of such descriptions to build up a complete font. A month ago I would have said that this would be an extremely useful utility to have but that I had not heard of any Amiga program, either public domain or commercial, that could do it.

Luckily things change – it turns out that HB Marketing (☎ 0753-686000) is now handling a program called *FontGrabber*. I've not used it, in fact I've not even seen it yet, but I have been told that is supposed to be able to do just these types of IFF/font conversions. ***PAO***

SINK OR SIMM



I would like to fit a hard drive with RAM expansion to my A500. Would I be able to take the SIMMs from my 8Mb Cortex expansion and use them in a hard disk such as the GVP Impact II+?

D Magill

Yes, the GVP Impact II+ will take SIMM modules, but it will only take a maximum of four modules (so 4Mb of RAM with four 1Mbx9 SIMMs or 8Mb of RAM with two 4Mbx9 modules). It'd be better to keep the Cortex expansion plugged in between your hard drive and the computer. ***JR***

C AND BASIC UNITED



How do I include assembler and C programs into GFA Basic to create a stand alone program?

Arthur King
Light Oaks
Stoke on Trent

I'm not going to go into a lot of detail for two reasons: Firstly,there's quite a lot of information in the GFA manual about this. Secondly, I'll be writing some articles later in the year on these topics and although they won't be GFA specific as such they will have some information useful to GFA Basic programmers.

The basic scenario is this: GFA's Basic compiler is able to produce linkable object code and this code can be combined with linkable modules that have been created using other languages.

Any C routines that you wish to use have to be created with a text editor and then compiled (you could use *NorthC* for this) to produce a linkable object code module. By convention these file modules are always given a '.o' file extension. If you are writing in 68K assembly language then assemblers, such as *Devpac*, can also be directed to produce linkable (as opposed to

continued on page 56

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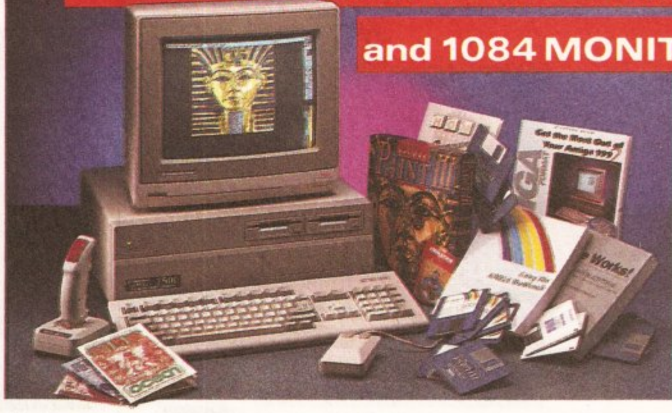
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directly executable) code modules.

Irrespective of the language used, these linkable modules are created with a standardised format and although there may be a few unresolved references present (and missing routines that are collected from various libraries at link-time) they are essentially a near complete representation of the 68K code which will go into the final program. The linker supplied with the GFA Basic compiler will be able to take specified sets of these linkable modules and, given the appropriate directives, turn them into a program that can be executed.

There are quite good explanations of the GFA related parts of the process in the GFA Basic compiler manual along with the register/parameter-passing conventions that have to be followed. Snags concerning parameter passing are sometimes encountered but again the GFA compiler documentation provides the necessary guidelines. ***PAO***

LEADLESS MONITOR

I can't get a monitor lead to connect my Amiga to an Amstrad VGA monitor and would like to know if you could give me a wiring diagram for it.

Gareth Robinson
Co.Antrim
N.Ireland

Unfortunately an Amstrad VGA monitor won't work with an Amiga without a flicker fixer, and probably won't work with the flicker fixer either (you need a Super-VGA or multisync monitors for this). ***JR***

TWINKLING STAR

Being rather worried that something was definitely wrong with my computer, I made many expensive phone calls and ended up phoning FMG, the Commodore repair company. After explaining my problem to the people there they said that either something was wrong with my computer or I had a virus, and they suspected the latter.

I have now bought three virus killers – *VirusX 4.01*, *KDVIII* and *Virus_Checker* – and all report that I do not have any nasty little viruses hanging around.

It all started with *Professional Page* – 8 times out of 10 some time during using the program it would display funny text and then shortly afterwards would crash. If I leave my Amiga 2000HD on, even without using it, after a while it crashes about 35% of the time.

The funny thing is that after a crash, when I start the machine up and do a Dir of the root directory on the hard drive there is always a file named '*', which may be empty or contain data. If I enter the editor to read this file the computer locks up and then Gurus. If I delete this file things seem to go back to normal.

Do you know of any viruses that would do this, and if so, what virus checker will get rid of it?

Another pointer to this theory is that a month ago I transferred some fonts on to my father's Amiga 500, and he has just informed me that when he uses them his computer crashes, and he also has this '*' file in the root directory.

FMG told me that if it is a virus I will need a new hard drive as it may not be removable!

Please, please help as I am very worried about passing the virus on, and my income is generated by using my computer.

Anon

Stop panicking, you have not got a virus. The file named '*' is created by AmigaDOS when the Run command is used inside a script file. To AmigaDOS the asterisk stands for 'the current console window', which, when you issue commands from a Shell window (another name for a console window), is that self same window.

But from inside a script the Run command isn't being issued from a console window, so when Run tries to execute the code that says something like 'Open *' – which means 'open the current console window for writing to' – AmigaDOS can't do it, so it creates and opens a file '*' in the current directory; when this happens in a startup-sequence it is usually the root directory.

Now there's a little more to it than that and my colleague and AmigaDOS expert Mark Smiddy will probably roast me alive for over simplifying, but I hope I've said enough to put your mind at rest. I guess you've got a line in your startup-sequence which reads:

```
run execute (some script ↵
file)
```

... and it's probably this Run command that is writing the '*' file. But if you change the line to read:

```
run >nil: <nil: execute ↵
(some script file)
```

... the '*' file won't get written. I'd have to go into quite technical detail to explain why – it would probably fill one or two pages – so forgive me if I leave you with the solution and run.

Oh, and feel free to phone FMG and tell them what bunch of plonkers they are. New hard drive indeed! ***JW***

ONLY HALF WAY THERE

I have a 1Mb Amiga 500 and a Star LC24-10 printer and I've been having some problems with my old word processor, *ProWrite 2.5*.

When I try to use the condensed features of my printer by selecting it on the printer and then making the page width on-screen wider, only about half the width of the paper is used. The same sort of thing happens when I print out graphics from *ProWrite*. I use the Nec_Pinwriter printer driver, but it's the same if I use EpsonQ. Is this a bug in the program, or what?

A Smith
Rothley
Leicester

The text on the example printout you sent me is wrapping after column 96, which would be the correct place for lines of text that were 8in in length printed in Elite pitch (12 characters per inch). Only your text is printed at 20 characters per inch, which is Condensed Elite, so you need 160 characters per line.

Try changing the Right Margin value in Workbench Printer Preferences to 160 or greater.

And you say that "the same sort of thing" happens with graphics? A little vague that one. Pity you didn't send me an example printout so I could see exactly what you mean. But it's not the printer driver.

Because it is so old, I couldn't get hold of version 2.5 of *ProWrite* to check it out – you ought to consider upgrading to the latest version, 3.2, which is much improved. ***JW***

IN AND OUT WITH MIDI

In issue 8 you picture a Yamaha PSS-590, which I have, yet when I connect up its MIDI-IN terminal with my sequencer's MIDI-OUT and the sequencer's MIDI-OUT with the keyboard's MIDI-IN I get terrible feedback. Is there a way around this problem? On the same subject I would like to play back tracks I have recorded whilst recording new tracks (I am attempting to use either *Music X* or *Sequencer One*).

Despite several attempts I have been unable to transfer *Sequencer One* from *Amiga Format*'s cover disk to my hard disk. It keeps asking me to load samples from df0: when I run it. Have I got a dodgy copy?

Peter Squires
Wickford
Essex

Firstly, I ought to point out that the Yamaha PSS-590 front panel illustration was simply to show a typical list of pre-set voices and had no specific connection with the rest of the text as such. In fact the workstation units, like the PSS-590, do tend to be somewhat different from conventional synthesizers, and the PSS-590 is no exception.

The cause of your feedback-type problem is due to something called a MIDI closed-loop connection. This simply means that your MIDI connections have been arranged in such a fashion that some (or all) of the MIDI data being generated at the PSS-590's MIDI-OUT is finding its way directly back to the PSS-590's MIDI-IN, being regenerated, and then pushed back through the PSS-590's MIDI-OUT again. This vicious circle of events overloads the MIDI lines, creates havoc with the system, and produces the horrendous noises you've experienced.

Two things have made this occur: Firstly the PSS-590 unfortunately has a MIDI-OUT terminal which is not standard. In fact it acts as a combined MIDI-THRU/MIDI-OUT connection and transmits not only what you play but a copy of all MIDI information that comes into the MIDI-IN terminal as well. Normally when these things are done the user is

JARGON BUSTING • JARGON BUSTING

AmigaDOS – The most basic part of the Amiga's operating system - the collection of programs that take care of the general running of the machine. AmigaDOS concerns itself with device-handling: control of the keyboard, basic screen output, disk drives, printers and so forth.

Interlace – A method used to double the apparent vertical resolution of the monitor by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen.

Run – An AmigaDOS command which sets a program going as a background process, multi-tasking with whatever is going on in the foreground.

Script – Meta-AmigaDOS command built from other AmigaDOS commands. More usually referred to as a batch file on other systems.

Virus – A program that lies hidden in memory or on a disk, duplicating itself on to any disks inserted in the machine, and generally causing havoc.

able to alter this arrangement (via some global internal setting) but in the case of the PSS-590 you are, as far as I can remember, stuck with the non-standard scheme. Your local Yamaha stockist, or the PSS-590 manual, should be able to give some more detailed info.

The second thing, assuming that you were experimenting with Gajit's *Sequencer One* is that this particular sequencer loads with its Soft-Thru option on – which means that *Sequencer One* would also have been echoing/translating incoming MIDI data and sending it, through the MIDI interface's MIDI-OUT connection, back to your synthesizer. The MIDI closed-loop occurred then because both the sequencer *and* the synthesizer were echoing incoming data. Turning off the Soft-Thru option should break that loop and enable you to record tracks from your PSS-590 without any problems.

When you play back a recorded track, the PSS-590 is going to generate the sounds associated with the sequencer generated MIDI data. This data, plus the MIDI equivalent of whatever you play additionally on the keyboard, will appear at the PSS-590's MIDI-OUT terminal. If this data is recorded you should find that it contains your original MIDI track plus any new material you've added.

As far as your *Sequencer One* copy is concerned, I doubt very much whether your copy is faulty. I spoke to the people at Gajits and they've suggested that you remove the *Sequencer One* configuration file. It's worth mentioning that Gajits Software's *Sequencer One Plus* program solves such snags by allowing file paths to be specified. It is also worth pointing out that, because of the problems people have been having with MIDI-IN echoing on some of the Yamaha workstation style synth range Gajits has provided a channel specific recording option which enables data echoed on other channels to be ignored. ***PAO***

INTERLACE INTRICACIES



One low-res interlaced screen contains twice as much information as a low-res screen which the Amiga can update at 50Hz. As monitors refresh at 50Hz, why can the Amiga not send half an interlaced screen in 1/50 second and the other half in the next screen update by the monitor. 25Hz update frequency would be the result for an interlaced screen, wouldn't it? Enough for no flicker to be apparent. This would not require any new capability from the machine (nothing major anyway). What is there against this idea?

What is the difference between standard, multisync and autoscan monitors?

Does *Vista* compare favourably with *VistaPro*?

R Mallinson
Skipton
N.Yorks

The Amiga interlace mode already works in exactly the way you describe! It sends half the screen in the first 1/50 second, and the second half the second 1/50 second. First the odd line numbers are sent, then the even lines. Even at 25Hz the flicker is very noticeable.

Monitors differ in the signal frequencies they display. Standard Amiga monitors can display standard Amiga displays at 16Khz; Multisync monitors can display a range of frequencies, typically 15Khz-35Khz, Bisync or Trysync autoscan monitors can display two or three fixed frequencies, typically 15Khz, 31.5Khz (VGA and de-interlaced Amiga), 35Khz (Super VGA).

VistaPro produces far better images than *Vista*, and is well worth the extra investment in software and memory. ***JR***

MIDI AND C



I am trying to write some code in C to talk to my music synthesizer via a MIDI interface connected to my serial port. I am using *SAS C 5.10* and am trying to use an example program from the Amiga ROM Kernel Manual (page 860) with a slight modification.

This is the program – it should just play middle C at full volume on channel 16:

```
#include <exec/types.h>
#include <devices/serial.h>
#ifdef LATTICE
#include <proto/exec.h>
#include <stdio.h>
int CXBRK (void) {return(0);}
void main(void);
#endif
#define DEVICE_NAME ↵
"serial.device"
#define UNIT_NUMBER 0
void main()
{
    struct MsgPort *SerialMP;
    struct IOExtSer *SerialIO;
    char data[5]={150,60,127,↵
0,0}; /* modified by me */
    if(SerialMP=↵
CreatePort(0,0))
    {
        if(SerialIO=(struct ↵
IOExtSer *) ↵
CreateExtIO(SerialMP, ↵
sizeof(struct IOExtSer)))
        {
            SerialIO- >io_↵
SerFlags=SERF_SHARED;
            if (OpenDevice(↵
DEVICE_NAME, ↵
UNIT_NUMBER,SerialIO,0) )
        printf("serial device↵
did not open\n");
        else {
        SerialIO->IOSer.io_↵
Command = CMD_WRITE;
        SerialIO->IOSer.io_↵
Length = 3;
        SerialIO->IOSer.io_↵
Data= (APTR)data;
        DoIO(SerialIO);
        CloseDevice(ø ↵
SerialIO);
        }
        DeleteExtIO(SerialIO);
        }
        DeletePort(SerialMP);
    }
}
```

The program is being compiled with the following command:-

```
lc -L -catsfq serial.c
```

The problem is that every time the pointer SerialIO is used as a function parameter, I get a warning saying '88: arguments not of correct type'.

This warning does not cause the compilation to abort and the executable program does not crash the system, but it does not trigger the synth. I would be very grateful if you could either show me the error in the program or some other example which just plays a single note over the MIDI interface.

Ian Marks
Swansea
South Wales

The warning messages you've been getting from the compiler arise because Exec functions like CloseDevice() expect to be passed ordinary IORequest structures whereas the serial device, as you know from the RKM manuals, needs specially extended structures. You can eliminate the warnings by casting the extended structures as if they are the normal variety if you so desire – but either way the compiler will generate the same code.

This however has nothing to do with your program faults and I think the reason that the example code didn't work is that it was transmitting serial data using the Preferences stored serial settings. There is a vital bit of information missing in the RKM example description – namely that it is necessary to use Preferences to change the serial device parameters to fit those required by MIDI (8 data bits, 1 stop bit, no handshaking and a 31250 baud rate will do the job). For this example this would be all that is required although you'll see from the RKMs that there are also a number of internally adjustable fine-tune options available for high-speed serial device work.

There is one other point that ought to be mentioned: if you were looking specifically for channel 16 MIDI data (ie with your synth set to channel 16) you would not have not heard anything anyway – the three bytes being transmitted (namely 150, 60, and 127) do give a middle C note, but it is not middle C on MIDI channel 16. You can see that from the binary form of the status byte:

150 decimal = 1 0 0 1 0 1 1 0 binary

1 0 0 1 is the note-on part of the status byte

0 1 1 0 is the channel number and since this is decimal 6 your program would actually have been transmitting data on MIDI channel 7.

To transmit on channel 16 you should have been using byte values of 159, 60, and 127. ***PAO***

DESKJET PROBLEMS



I have a Hewlett-Packard DeskJet 500 printer to go with my Amiga 500 (1Mb graphics memory, 4Mb expansion) and GVP Impact II hard drive. I'm having problems with page layout.

The printer self-tests were fine; I set up the printer for A4 paper and selected the HP_DeskJet driver supplied on Extras 1.3. When printing a *Wordworth* file (with perforation skip disabled) I find the top margin is 1/16in too large and the left margin is 1/8in too wide.

The manual says that the the left-most printable position on A4 paper is 1/8in in; it appears the printer is adding this 1/8in to the margin specifiied in *Wordworth*.

Also it performs a blank form feed even though the form feed is not selected in *Wordworth*.

I also use *PageSetter II* to produce a newsletter and this gives rise to more problems. The left margins are 1/8in too wide, and the top margin is 3/16in too large.

However my most serious problem is that printing stops at 10in down the *PageSetter* page. I've tried all kinds of settings combinations with the same result.

Using *Wordworth* the printer will happily print a full page of text, but with *Deluxe Paint IV* pictures larger than A4 are scaled down to 10in maximum height. So my problem seems to be that I am in some way limited to 10in of graphics – no good for an A4 newsletter.

Is my printer driver insufficient?

D Lambert
Shotley Gate, Ipswich

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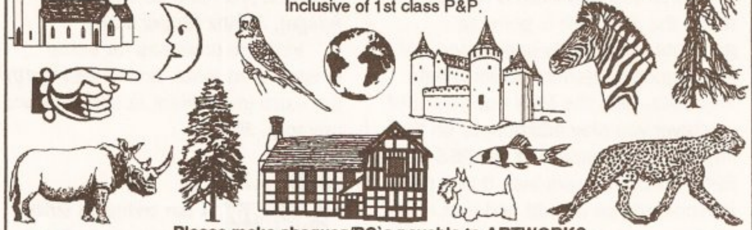
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Yes, the 10in graphics limitation is the fault of the HP_DeskJet printer driver. To save me repeating myself, read the answer to Simon Putland's letter ('DeskJet 10 inch cutoff').

The DeskJet, as you have found, imposes certain left and top margins. Now you've discovered the exact measurements of these, surely it's a simple matter of subtracting those measurements from the top and left margin settings in *Wordworth*? Alas you can't do the same in *PageSetter II*, but Gold Disk addressed this well known DeskJet 'feature' in *Professional Page* by adding an Offset gadget in the Print requester.

As for the extra form feed at the end of printing a document, I've noticed this and haven't yet figured out how to prevent it. It's probably a little bug in *Wordworth*. ***JW***

JARGON BUSTING • JARGON BUSTING

Compugraphic fonts – Rather than a simple bit-mapped image of each character, which grows more jagged and unsightly with progressive magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied as it is printed, no information is lost and the result always looks smooth.

Directory – An organisational method of storing files on a disk in a heirarchy. A directory is a sub-section of a disk which may contain files and/or further directories ·which may in themselves contain files and directories). In this way, related files can be grouped together.

Metronome – A clockwork device which produces a beat on a regular, adjustable time interval. Musicians use metronomes to help them play in at an even tempo. A metronome on a computer is usually emulated using a synthesised 'click'.

CAN'T FIND THE WORDS

I have a similar problem to that of Ian Betts (*AS*, February 1992) in that when using *Professional Page 2.0* from the floppy disks I was able to access *TransSpell* from the *Article Editor* without any problem. But, since transferring the package on to my A590 in accordance with the instructions given, *TransSpell* will not load into RAM from the hard disk and I get a 'cannot be found' requester. Please advise.

I also still run *PageSetter II* as it has features which *Professional Page* doesn't, such as outline lettering and patterned in-fills, plus paragraph indenting is simpler – for straightforward work I find *PageSetter II* easier to use.

Since both *Professional Page* and *PageSetter II* use the same type of cache for the Compugraphic fonts, am I able to have only the one CGCache: directory accessible to both programs? If so, how?

Brian P Sharman
Teynham
Kent

The *Article Editor* (AE) and *TransSpell* programs need to be in the PPage: directory, which is the same directory the *PPage* program is in, and the dictionary – the file called pfsf6b90k (or something like that) – needs to be in the CGFonts: directory, which is the same directory that the Compugraphic fonts are in. (Don't confuse CGFonts: with CGCache:)

Yes, CGFonts: seems a silly place to put the dictionary, but if it isn't in CGFonts: *TransSpell* can't find it in order to copy it to RAM.

You can use the same CGCache: for *Professional Page 2.0* and *PageSetter II* with no problem. Simply create a single 'cgcache' directory somewhere on your hard drive and then change the Assigns to CGCache: for both *Professional Page* and *PageSetter II* to reflect the position of this directory. Then move all your font caches into the new CGCache: directory.

You can also let them share the CGFonts: directory, except that there is a certain very important program called 'CGT' in the CGFonts: directory that is different for *Professional Page 2.0* and *PageSetter II*.

One way around this problem would be to rename them 'CGT.ppage' and 'CGT.ps2' and move them out of CGFonts: into (for example) the CGCache: directory. Then you'd need to write a script for each program that first copied the relevant 'CGT.xxxx' file into CGFonts:, renaming it to 'CGT' in the process.

Something like this, for *Professional Page 2.0* for example:

```
copy cgcache:cgt.ppage to ↵
cgfonts:cgt
run >nil: ppage:ppage
```

Version 2.1 of *Professional Page* completely does away with font caches, which, as you no doubt already know, can free up megabytes of space on your hard drive. Its screen refresh rate is also very much quicker than version 2.0 – I'm not exaggerating, you really do notice the difference. It's well worth registering with Gold Disk in the States and writing for the upgrade. ***JW***

MUSIC X-TINGUISHED

My problem is in trying to get my synth to communicate with *Music X*. If I put the synth into MIDI mode, with the channel set at number 1 and the synth set to Sound Source Mode, then loading an example file in *Music X* and playing it results in some sounds coming from the synth. These are generally unmusical fragments.

Now I think if I spend the time to work out the protocols and set up a protocol file in *Music-X* then I might be able to get it to work but I am not certain that is the problem.

The worst part is trying to get keyboard sequences into *Music-X*. This time I set the synth into Midi Keyboard Assign mode, which is intended for playing other MIDI equipment from the PSS780 keyboard. I set up a blank file in *Music-X* with just the metronome track as suggested and then select RECORD. If I attempt to play the keyboard the keys are not detected and recording doesn't start. If I start recording by clicking the GO button on *Music-X*'s requester, all I get are a few empty bars recorded no matter what keys I play.

I wrote to the Software Business which markets *Music-X* and the people there said that when the title is displayed a short 'jingle' should play and suggested that if this does not happen then my MIDI interface or serial port are faulty. However, although the jingle does not play with my set up, the keyboard does indicate that it is receiving MIDI data by flashing the MIDI received light.

Have you any suggestions as to what I am doing wrong? In case you think it is the connections I have, the synth MIDI-OUT is connected to the interface MIDI-IN and vice versa with both cables connected all the time. I have a Trilogic 2 MIDI interface and a Yamaha PSS780 Music Station digital synth.

Peter Blair
Leyburn
North Yorkshire

Shortly after *Music-X* displays its logo page it does play a few notes on all sixteen MIDI channels (it only lasts a second or so) and if your synth is properly set up then, yes, you should hear the jingle that you've been told about. You've said that the synth led indicates that it does receive some MIDI data at this time and this is a good sign – it suggests to me that both your serial port and MIDI interface are OK. The Trilogic 2 interface has a couple of green leds which, though permanently on, blink as MIDI data passes through the unit. It would be worth checking that, when the *Music-X* jingle is sent, the interface MIDI-OUT led also indicates that some type of MIDI data is being transmitted. You've also said that when an example file is loaded from *Music-X* you do get some sort of noises from the synthesizer – I think the problem here is simply that an unsuitable set of voice-channel synthesizer assignments are being used.

On the MIDI recording side the fact that *Music-X* does not record what you play is significant – that requester with the GO button should vanish and recording should start as soon as you hit a key. I suspect that the Trilogic 2 interface's MIDI-IN led does not blink when you press keys on the keyboard and that the problem is that the PSS780 is not generating any MIDI data in the first place. It could however be something silly like a faulty MIDI lead so this also needs to be checked.

The sad thing about these types of MIDI problems is that they are easily solved by having the equipment, and its manual, in front of you. My guess is that most, if not all, of your problems stem from the way the PSS780 has been set up. The difficulty, from my point of view, is that I've not used a PSS780 – as you must know there are many hundreds (if not thousands) of different synths and although I get to see a lot there are still plenty that I neither see nor get any technical info on. The PSS780 just happens to be one of this latter group.

Nevertheless I have a few suggestions: firstly, re-read the manual to make sure that you do understand the setting up procedures. Secondly, a trip to a local Yamaha-literate music shop might prove fruitful – you'll invariably find that most of the sales assistants are musicians themselves and those who are MIDI literate will be only too pleased to help. Thirdly, if all else fails, call Yamaha on ☎ 0908-566-700 and ask for the technical department which deals with the PSS synth range – they'll be able to offer specific advice on your particular synth model. ***PAO***

DESKJET 10 INCH CUTOFF

I have recently bought *Professional Page 2.1* and a Hewlett-Packard Deskjet 500 printer. I have a 1.3 Amiga 500 with 2Mb RAM and A590 hard drive.

My problem is that when I try to print a page from *Professional Page* a 1.5in gap is left blank at the bottom, leaving out any text or

continued on page 66

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- ☆ 10 BLANK 3.5" DISKS
- ☆ DISK LIBRARY CASE
- ☆ MOUSE MAT
- ☆ 3 TAILORED DUST COVERS

ADD A CUMANA CAX 354 SECOND DRIVE FOR JUST £50 TO HELP RUN THOSE BUSINESS PACKS MORE EFFICIENTLY

WE MEAN BUSINESS AT A GREAT PACKAGE PRICE OF JUST...

£899.95 Including VAT

EDUCATION — HARWOODS LEARN & PLAY

PRIMARY & JUNIOR PACK A

Get your children off to the right computing start with this software learn and play pack...

PROF. PLAYS A NEW GAME
PROF. LOOKS AT WORDS
PROF. MAKES SENTENCES
PROF. HUNTS FOR WORDS
Active, enquiring young minds love seeing the cartoon character called Prof. entertain and teach. Children take charge of Prof. on the computer, active learning. Follows National Curriculum(N.C.).

HOMEBASE
Ideal home storage system. Keep household lists, student records etc. Easy to use "push button" controls.

PRIMARY MATHS COURSE
Around 24 modules in this course from 3 yrs old right up to secondary level. Follows N.C.

READING & WRITING COURSE
24 module course. Teaching from the computer and books. For early starters & the dyslexic.

LESSON A — EDUCATION — PACK A

A GREAT EDUCTIONAL PACK FOR YOUR CHILDREN AT A FRACTION OF THE NORMAL COST

£89.95 Including VAT

EDUCATION — HARWOODS LEARN & PLAY

GCSE/'O' LEVEL PACK B

GCSE examination level studies on your Amiga computer that's fun!

MICRO ENGLISH, MICRO FRENCH AND MICRO MATHS
A set of three complete self-tuition courses to GCSE level which can also be used for revision work. All programs adhere to the National Curriculum and were designed and tested in schools by professional teachers. Micro French includes "real speech" to help your accent!

PEN PAL- Graphical Word Processor
A fantastic word processor with all the tools you'll need to create effective written work. Ideal for home work, projects etc. or for the families letters. Text wraps automatically around graphics, even as you type! Includes a built-in database and Forms Manager.

HOMEBASE
Homebase is the ideal information storage program for things like household lists, student notes, and children's educational projects. Inc. clearly labelled "push button" controls and clear comprehensive reference manuals.

LESSON B — EDUCATION — PACK B

A GREAT EDUCTIONAL PACK FOR YOUR CHILDREN AT A FRACTION OF THE NORMAL COST

£89.95 Including VAT

Enquiries & Order Line: 0773 836781

Finance Facilities Available*
Please phone us for information and your personal application pack.

VISA — Access — Switch

GORDON HARWOOD HARWOOD HARWOOD Computers

ALFRETON DERBYSHIRE

The Closer you look, The Better we look.

**Finance terms are available (subject to status) for most products: please see our ordering panel at the end of this advert for full details*

SOUND AND VISION
Words and Pictures
CDTV



IMAGINE, IF YOU CAN, THE CONCEPT OF A NEW, MORE POWERFUL AMIGA...

...WITH 1 MEGABYTE OF MEMORY, AND A COMPACT DISK DRIVE OF ALMOST INFINITE SIZE. A DISK DRIVE SO VAST, IT CAN STORE HUNDREDS OF MILLIONS OF DIGITS OF DATA. THIS DATA COULD BE, SPEECH, ANIMATED PICTURES, DIGITISED STEREO SOUND, COMPUTER IMAGES OR WHOLE ENCYCLOPAEDIAS.... AND MORE.

IMAGINE THIS, AND YOU CAN START TO GRASP THE CONCEPT OF CDTV.

THE INTEGRAL COMPACT DISK DRIVE, IS THE KEY TO THE POWER OF CDTV. ITS STORAGE CAPACITY IS EQUIVALENT TO AROUND A QUARTER OF A MILLION FULL PAGES OF TEXT. THIS WHEN INTEGRATED WITH THE 1 MB OF INTERNAL AMIGA CIRCUITRY, CREATES A SYSTEM, WHICH FROM A CD DISK, CAN GIVE YOU ACCESS TO AN UNIMAGINABLE SPECTRUM OF REAL WORLD IMAGES, NEVER SEEN COMBINED BEFORE. THESE VIVID IMAGES, WITH WORDS AND SOUNDS, GIVE YOU A WHOLE NEW DIMENSION IN HOME EDUCATION, ENTERTAINMENT & INFORMATION TECHNOLOGY. AND... DON'T FORGET, THAT CDTV CAN PLAY IN SUPERB QUALITY, ANY NORMAL AUDIO MUSIC CD, AND IT CAN ALSO PLAY THE NEW CD+G DISKS, WHICH GIVE DIGITAL SOUND AND ON SCREEN GRAPHICS.

ON CD DISKS NOW AVAILABLE, THERE ARE EDUCATIONAL PACKAGES, ENCYCLOPAEDIAS PACKED WITH REFERENCE INFORMATION, STUNNING GAMES, MUSIC SYSTEMS AND MANY OTHER NEW AND VARIED SUBJECTS, INCLUDING WHOLE WORLD ATLASES OR EVEN THE COMPLETE WORKS OF SHAKESPEARE, EACH ON ONE CD DISK!!! **CDTV - NOTHING LESS THAN REVOLUTIONARY**

FREE CDTV STARTER PACK!!!

WHEN YOU CHOOSE YOUR CDTV FROM GORDON HARWOOD, NOT ONLY DO YOU GET OUR LEGENDARY SERVICE, BUT WE GIVE YOU A CDTV STARTER PACK, TO GET YOU EXPLORING YOUR NEW WORLD - STRAIGHTAWAY. THIS INCLUDES A SUPERB SELECTION OF CD DISK TITLES INCLUDING THE WELCOME TUTORIAL & HUTCHINSONS ENCYCLOPAEDIA, PLUS ... FOUR GAMES, SHERLOCK HOLMES & THE HOUND OF THE BASKERVILLES, SIM CITY, CHAOS IN ANDROMEDA, AND THE ACCLAIMED LEMMINGS, WORTH IN TOTAL ALMOST £170.00. IN ADDITION IS THE INFRARED REMOTE CONTROLLER, AND ALL THE HARDWARE NEEDED TO GET YOU CONNECTED.

ALL THIS FOR JUST £499.95

CDTV IS THE SAME SIZE AND STYLE AS MOST VIDEO RECORDERS, SO IT CAN SIT UNOBTRUSIVELY ABOVE OR BELOW YOUR HOME TV AND/OR HI-FI. AND WITH ITS INFRARED REMOTE CONTROLLER, IT CAN BE OPERATED FROM YOUR ARMCHAIR. BUT PERHAPS MOST IMPORTANTLY, IF YOU ARE A COMPUTER ENTHUSIAST, REMEMBER THAT INSIDE EVERY CDTV, IS AN AMIGA, JUST WAITING TO BE USED. SO LATER ON, YOU'LL BE ABLE TO BUY THE OPTIONAL KEYBOARD AND DISK DRIVE, TO GET INTO THE WORLD OF AMIGA COMPUTING. PRINTERS, DIGITISERS, GENLOCKS AND OTHER ACCESSORIES,CAN ALL BE CONNECTED TO GIVE ACCESS TO MANY OTHER EXCITING FACILITIES, AND ALSO MANY OF THE EXISTING SOFTWARE PACKAGES AVAILABLE FOR THE AMIGA COMPUTER. NEVER BEFORE HAS THERE BEEN SO MUCH POTENTIAL FROM ONE NEW STUNNING SYSTEM, PACKED WITH

TODAYS TECHNOLOGY.!

CALL IN AND SEE US FOR YOUR PERSONAL DEMONSTRATION, OR PHONE US FOR YOUR FREE DETAILED CDTV INFORMATION PACK.

CDTV ACCESSORIES

Please call for latest availability.

CD 1220 KEYBOARD	AN 89 KEY QWERTY KEYBOARD	£49.95
CD 1252 MOUSE	INFRARED MOUSE WITH BATTERY SAVER.	£49.95
CD 1200 TRACKBALL	INFRARED TRACKBALL, WITH THE OPTION OF DIRECT CONNECTION TO EXTEND BATTERY LIFE. DUPLICATES FUNCTIONS OF 2 BUTTON MOUSE & INCLUDES TWO 9 PIN PORTS FOR STD. JOYSTICKS	£79.95
CD 1400 CADDY	FOR HOLDING CD WITHIN DRIVE	£9.95
CD 1401 MEMORY CARD	PERSONAL RAM CARD CONTAINING 64K OF MEMORY FOR STORING DATA OR AS A BOOKMARK FACILITY WITHIN CDTV	£79.95
CD 1405 MEMORY CARD	A LARGER PERSONAL RAM CARD CONTAINING 512K OF MEMORY FOR STORING DATA OR AS A BOOKMARK FACILITY WITHIN CDTV	£249.95
CD 1800 FLOPPY DRIVE	RACK MOUNTABLE FLOPPY DRIVE WITH 880K CAPACITY. CASING ALLOWS ROOM FOR ADDITIONAL HARD DRIVES OR MODEMS ETC.	£99.95
CD 1301 GENLOCK	PAL BASED VIDEO INTERFACE CARD FOR SUPERIMPOSING CDTV IMAGES OVER A VIDEO SIGNAL PROVIDED BY ANY STANDARD VIDEO SOURCE	£149.95
CUMANA 3.5" DRIVE	CDTV COMPATIBLE AND STYLED IN MATCHING BLACK. (Same spec as CAX 354 on page 4 of this advertisement)	

Many Amiga Accessories & Peripherals (e.g. Printers, Disk Drives, Software etc.) are compatible with CDTV. Please phone us for compatability information.

HARWOODS AMIGA
PRO-GEN
NEW LOWER PRICE



PROFESSIONAL QUALITY GENLOCK FOR COMPUTER AND VIDEO MIXING, AT A DOWN TO EARTH PRICE!!!

Please note the above photograph shows Spectracolor which has now been replaced by Photon Paint 2.0

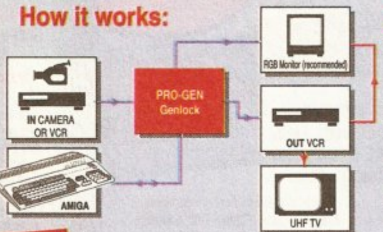
PRO-GEN Amiga Genlock

The Pro-gen AMIGA Genlock allows you to mix your Amiga display with any PAL video signal whether it is from a VCR, Laserdisk player or a Camcorder. In fact any item of video equipment which outputs a PAL composite video signal.Combined with the Amiga computer the Pro-Gen gives you the facilities of a special effects & video titling suite. Take your own films & give them a professional look by OVERLAYING TITLES or by SUPER IMPOSING YOUR OWN GRAPHICS created in packages like Photon Paint 2.0 or Deluxe Paint. Pro-Gen is supplied with micro illusions superb Photon Paint 2.0 package.

FREE

A powerful Lo-and-Hi resolution hold and modify (HAM) paint program, with overscan (NTSC/PAL) and special effects for your Amiga Computer including all the following... **Contour Mapping:** drapes a brush over a 3D "landscape". Pixel intensity values decide the peaks and valleys, while a specially developed ray-tracing algorithm maps the image precisely. **Surface Mapping:** around 3D objects, both geometric and free hand drawn. **Luminance:** sets the light source and intensity. **Shadowing**: automatically with control of size and offset. **Brush Control:** twist, tilt, resize, flip, rotate, bend, adjustable transparency, stretch etc etc. PLUS LOTS MORE! A great program allowing use of 4096 colours. Choice of horiz/vert page print, negatives, anti-aliasing, dithered print, adjustable brihgtness etc.

How it works:



STOP PRESS

PRO-GEN... NOW INCLUDES A VERY VERSATILE MULTI COMPONENT VIDEO TO GENLOCK CONNECTING CABLE KIT. THIS ALLOWS PRO-GEN TO BE USED STRAIGHTAWAY WITH MOST POPULAR VIDEO EQUIPMENT, WITHOUT THE NEED TO HUNT DOWN THE CORRECT CONNECTING CABLES. THIS KIT CAN ALSO BE USED TO CONNECT IN OTHER WAYS... eg. VCR TO VCR etc.
A KIT TO START YOU OFF RIGHT FROM THE MOMENT YOU OPEN THE BOX!!!

NEW LOWER PRICE

PRO-GEN with Photon Paint 2.0 ONLY £99.95

Mode Switch-box for Genlocks

Features Include
- Compatible With The Pro-Gen And Rendale 8802
- Supplied With Genlock Extender Cable Worth £9.95
- Switch-box Switches Between Foreground, Background, Video And Computer Modes.

£29.95

AMIGA DRIVES & MEMORY

Cumana CAX354 3.5" External 2nd Disk Drive.

- ☆ Features Include
- ☆ Long connecting cable
- ☆ 1Mb, (880K Formatted) Capacity
- ☆ Enable/Disable Switch,
- ☆ Throughport
- ☆ Access Light
- ☆ Compatible with Amiga 500/1000/1500/2000/3000 and CDTV

£57.95



NOW SUPPLIED WITH A FREE 3.5" DISK HEAD CLEANER for optimum reliability

BLACK CDTV COMPATIBLE VERSION AVAILABLE NOW!!!

NEW! **GVP 52-105Mb HARD DISK DRIVE WITH MEMORY EXPANSIONS OF UP TO 8Mb.**

- ☆ Capacities of 52 or 105Mb available
- ☆ Connects to sidecar bus on L/H side of A500/A500 Plus
- ☆ Autoboots with Kickstart 1.3/2.0, boot enable/disable switch
- ☆ Sockets for up to 8 Mb of RAM expansion
- ☆ SCSI Port allows up to 7 other devices to be connected
- ☆ Supplied with easy to use software
- ☆ 2 Year Warranty — Complete with dedicated PSU
- ☆ Mini slot for future expansion capabilities
- ☆ PC-AT Emulator planned to be available for 1992

GVP PRICES

RAM SIZE	CAPACITY 52Mb.	105Mb.
0Mb.	£359.95	£549.95
2Mb.	£429.95	£629.95
4Mb.	£509.95	£749.95
8Mb.	£699.95	£929.95

Call for... UPGRADE PRICES!



EDUCATION SOFTWARE

DON'T JUST PLAY GAMES WHEN YOU CAN LEARN WITH YOUR AMIGA TOO!

MICRO MATHS - 24 easy to use programs for GCSE ('O' Level) revision or self tuition **£21.95**

MEGA MATHS - A 9 level step by step tuition course. For mature beginners, 'A' Level studies & Micro Maths users **£21.95**

MICRO FRENCH - GCSE French tuition or revision course. Covers both spoken & written French **£21.95**

MICRO ENGLISH - A complete programe of self-tuition up to GCSE standard **£21.95**

PRIMARY MATHS COURSE - Ages 3 to 12, Complete 24 Programme Course. **£21.95**

SPELL BOOK - Ages 4 to 6, Developed with the help of a Primary School Head Teacher to aid spelling skills. **£17.95**

PROF: Hunts for Words - With clues for Prof. and his young audience, children can hunt for words and complete a story. **£24.95**

PROF:Looks at Words - You direct Prof. around the screen searching for letters to complete the words. 17 levels of play. **£24.95**

PROF:Makes Sentences - Children help Prof. make up sentences by unjumbling sequences of words - great animation. **£24.95**

PROF:Plays a New Game- Comes with a story disk, audio tape, and an illustrated raeding book. **£24.95**

HARWOODS AMIGA 1Mb PRO-RAM PLUS

ADD MORE POWER TO YOUR AMIGA 500 PLUS WITH A FULL 1Mb. MEMORY UPGRADE!!!

- ☆ 1Mb. RAM expansion for the Amiga 500 Plus
- ☆ Gives a total of 2Mb. of RAM
- ☆ Easily fitted without any dismantling in the trapdoor expansion slot underneath Amiga. DOESN'T invalidate your warranty!
- ☆ Low power consumption — 2 Yr Guarantee!

A GREAT NEW OFFER FROM HARWOODS

Only... **£44.95**

0.5 Mb PRO-RAM

- ☆ Compatible with Amiga A500 and 500 Plus
- ☆ Gives A500 a total of 1Mb Memory + Clock
- ☆ Gives 500 Plus a total of 1.5Mb Memory

Only... **£29.95**

AMIGA SOFTWARE

Music-X: The ultimate software for professional MIDI sequencing. The software includes a configurable librarian and a synthesiser patch editor. All you need to recreate a song can be recalled from one performance file including sequences, MIDI routing, sync setup, keyboard maps & synthesiser or drum machine patch libraries. **NEW LOW PRICES - £54.95 or just £74.95 with midi-interface!**

MIDI INTERFACE (5 Port): In, Out, Through plus 2 switchable thru'/out. Includes cable. **£24.95**

AMOS: AMOS allows you to access the power of the Amiga with ease. 500 different commands make AMOS a sophisticated development language. The AMOS animation language allows you to create complex animation sequences. 300 page manual and over 80 example programs **£49.95**

Amos Add on Modules: (BOTH require Amos prog.)
Amos Compiler — **Amos 3D**

BUY ALL THREE AMOS PROGRAMS FOR JUST **£89.95**

SuperBase 4: Most powerful database available for the Amiga.Combines the ease of use of Super-Base 2 with a versatile programming language so that you can tailor your data to your own specific needs for club/business/library records etc. **£229.95**

Lattice C: An ideal tool for the C programmer whether experienced or a novice. The best way to create applications for the Amiga.Fully supports Motorola chipset. Nearly 300 functions optimised to help the user write the tightest possible code. Includes screen editor. Most Amiga C books are based around lattice. (Requires either 2 floppy drives OR a hard disk drive) **£199.95**

Deluxe Paint IV: Latest version of the Amigas first, and still the best, paint and animation package, now including HAM mode. (1 Mb. minimum memory or more recommended) **£79.95**

Vidi, The Complete Colour Solution: Vidi with RGB Splitter, Frame Grabber & Digitiser. Grabs moving colour video into 16 grey scale frames (up to 16 frames in 1Mb. Amiga) and digitises from still colour video source in up to 4096 colours in less than 1 second! Requires home VCR or video camera for grabbing. Requires video camera or VCR with perfect pause for digitising. Now comes with Photon Paint 2.0 ABSOLUTELY FREE OF CHARGE!!! **£179.95**

MASTERSOUND: High quality "mono" sampler (best for sampling instruments etc.) **£36.95**

THE ABOVE IS JUST A SMALL SAMPLE FROM OUR EXTENSIVE RANGE OF THOUSANDS OF SERIOUS, EDUCATION AND RECREATION TITLES.WE CAN'T LIST THEM ALL HERE SO PLEASE CALL US IF YOU CAN'T SEE THE PROGRAM YOU REQUIRE, IT'S PROBABLY IN STOCK!

Pen Pal V.1.3

WORD PROCESSOR/DATABASE

With Pen Pal you can mix text, 4096 colour graphics & data in ways no other w/p can! "It's handling of graphics is unsurpassed: Pen Pal is the only word processor I tested that will automatically wrap text round graphics..

Amiga World, July '90



£79.95

PEN PAL complete WITH 512K Amiga RAM Expansion ***only...£99.95!***

All our packs contain the new Amiga A500 Plus. (1.3 Amigas may still be available to special order, please enquire.)

Enquiries & Order Line:

0773 836781

Finance Facilities Available*

Please phone us for information and your personal application pack.

GORDON HARWOOD HARWOOD HARWOOD Computers

ALFRETON DERBYSHIRE

The Closer you look, The Better we look.

**Finance terms are available (subject to status) for most products: please see our ordering panel at the end of this advert for full details*

FREE... Fully Tailored Dust Cover with all Dot Matrix Printers

NEW FREE ACCESSORIES

PRINTERS

All printers in our range include a standard Centronics/Parallel Port for direct connection to Amiga, PC's, Atari ST's, Archimedes etc.

We supply a connection cable to YOUR computer plus a Quality Dust Cover with ALL Dot Matrix Printers — FREE FREE



When you are comparing our prices to others make sure that the same essential items are included eg. Printer Lead, Dust Cover, Postage and VAT etc.

GORDON HARWOOD PRINTER STARTER PACK
ALL our Dot Matrix Printers are supplied complete with...
- 200 Sheets of Continuous Printer Paper — FREE
- 100 Useful Self Adhesive Continuous Labels — FREE
- Amiga Printer Drivers Disk — FREE

CITIZEN 120D+ 9 PIN MONO - Up to 120/25 cps — **£149.95**
- Very reliable low cost printer with interchangable interfaces for Centronics/RS232/serial type (C64 etc.)
- Full 2 Year manufacturers warranty

NEW FASTER STAR LC20 9 PIN MONO - Up to 150/38 cps — **£159.95**
Replacement for our most popular Mono Dot-Matrix at a super low price
- Multiple font options easily accessible from front panel
- Excellent paper handling facilities
- Simultaneous, continuous and single sheet stationery
- 240 x 240 dpi Graphics

STAR LC200 9 PIN COLOUR PRINTER - 185/40 cps — **£209.95**
This is the one in our packs!
- 80 Column Dot Matrix
- 240 dpi - 9 Pin COLOUR
- 16K Buffer, 8 Resident Fonts
- Push/pull tractor & rear/bottom feeds
- Reverse paper feeds
- Micro paper feed, Max. paper width 11.7"
- Supplied with colour & mono ribbons
- Paper park with auto single sheet loading
- Programmable from front panel.
- 12 month warranty

CITIZEN SWIFT 9 PIN COLOUR - 160/40cps — **£219.95**
New super high spec 9Pin colour printer
- 8K Buffer 4 Fonts
- Push and pull tractor built-in
- Feed for labels/multi part stationery
- 240 x 240 dpi Colour Graphics
- Best text quality in our 9Pin range
- 2 Year Citizen warranty

STAR SJ48 INKJET PRINTER — **£249.95**
New super high quality bubble ink jet printer
- 64 Nozzle ink jet
- Emulates Epson LQ and IBM Proprinter for full compatibility
- Complete with AC adaptor
- Large 28K Buffer
- 360 x 360 dpi near laser print quality
- Optional Ni-Cad battery for mains free operation

STAR LC24/200 24 PIN MONO - 220/55 cps — **£249.95**
Mono version of LC24/200 Colour, same spec except for a smaller 7K buffer

STAR LC24/200 24 PIN COLOUR - 220/55 cps — **£299.95**
Colour version of the LC24-200 Mono.
- 80 Column Dot Matrix
- 360 dpi - 24 Pin MONO
- 30K Buffer (expandable)
- 10 Resident Fonts
- Front Panel Pitch Selection
- Push/pull tractor & rear/bottom feeds
- Reverse paper feed
- Paper park with auto single sheet loading
- Micro paper feed, Max. paper width 11.7"
- Supplied with mono ribbon
- Faster than the old LC24-10
- Extra font cartridges available
- Program from front panel, No DIP switches
- 12 month warranty

NEW 24 Pin CITIZEN 224 COLOUR - 160/53 cps — **£259.95**
Brand New, lowest cost colour 24 Pin printer, anywhere!
- 80 Column Dot Matrix with 4 Fonts
- 360 dpi - 24 Pin COLOUR
- 8K Buffer expandable to 32K
- Easy to use front panel controls
- Push & pull tractor feeds
- Complete paper parking facilities.
- Supplied with mono & colour ribbons
- Full 2 Year Citizen Warranty

NEW 24 Pin CITIZEN SWIFT 24E COLOUR - 180/60 cps — **£319.95**
Brand New, superb specification colour 24 Pin printer.
- 80 Column Dot Matrix with 7 Fonts
- 360 dpi - 24 Pin COLOUR
- 8K Buffer expandable to 32K
- Easy to use LCD panel controls
- Push/pull & bottom tractor feeds
- Complete paper parking facilities.
- Supplied with mono & colour ribbons
- Full 2 Year Citizen Warranty

NEW FASTER STAR XB 24 PIN COLOUR RANGE XB24-200 & XB24-250 - 275/80 cps — **£399.95** 24-200 Colour — Wide Carriage **£499.95** 24-250 Colour
These NEW top of the range Stars replace the XB24/10 & XB24/15, & offer the best possible quality dot matrix printing
- Exceptional print quality
- 4 x 48Pin super letter quality fonts
- 14 x 24Pin near letter quality fonts
- Buffer: 29K(XB24/200) & 76K (XB 24/250)
- 360 x 360 dpi Colour Graphics
- 12mths on-site warranty (UK Mainland)

HEWLETT PACKARD PAINTJET COLOUR A4 INKJET — **£599.95**
Our best quality full colour printer at a realistic price
- Parallel/Centronics or Serial RS232 I/F (specify with order, MAC option available)
- For presentation graphics/DTP, CAD and technical/scientific applications
- A full page of colour graphics in 4 minutes (typical)
- Non impact printing, virtually silent, 43dba
- Will print transparencies
- 12 Months on-site warranty (UK Mainland)

STARSCRIPT - 4ppm POSTSCRIPT COMPATIBLE LASER — **£1099.95**
A4 Laser Printer, will connect to PC, Amiga, Atari ST, Macintosh etc.
- 300 DPI, 2Mb. Upgradable to 5Mb.
- Emulations inc: HP Series II, Epson EX800, IBM Proprinter & Diablo 630
- Complete with "Starscript" (Stars postscript language emulation)
- Serial and Parallel Interfaces
- 12month on site warranty (UK Mainland)
- 49 quality fonts built-in
- Appletalk for connection to Macintosh
- Every desktop publishers dream

SEE OUR LIST OF ACCESSORIES FOR BOTH STAR AND CITIZEN PRINTERS, ALL AT COMPETITIVE PRICES!
All the characters Per Second speeds quoted above are Draft/LQ at 10cpi

PRINTER ACCESSORIES

CITIZEN PRINTER ACCESSORIES:

Citizen 120D+ Sheet Feeder — £69.95
Citizen 120D+ Parallel Interface — £49.95
Citizen 120D+ CBM C64 Serial Interface — £49.95

Citizen 124D 32K Buffer — £13.95
Citizen 124D Semi-Auto SheetFeeder — £39.95
Citizen 124D Automatic Sheet Feeder — £79.95
Citizen 124D Printer Stand — £24.95

Citizen Swift 9 Semi-Auto SheetFeeder — £39.95
Citizen Swift 9 Automatic Sheet Feeder — £79.95
Citizen Swift 9 Printer Stand — £24.95

Citizen Swift 9X Printer Stand — £34.95
Citizen Swift 9X Automatic Sheet Feeder — £139.95

Citizen Swift 24 32K Printer Buffer — £13.95
Citizen Swift 24 Semi-Auto Sheet Feeder — £39.95
Citizen Swift 24 Automatic Sheet Feeder — £79.95
Citizen Swift 24 Printer Stand — £24.95

Citizen Swift 24X Auto Sheet Feeder — £139.95
Citizen Swift 24X Printer Stand — £34.95

HEWLETT PACKARD PAINTJET PRINTER ACCESSORIES:

Hewlett Packard PaintJet
Black Ink cartridge — £25.95
Colour Ink Cartridge — £31.49
Single Sheet Printer Paper — £17.95
Z-Fold Printer Paper — £15.95
Transparency Paper: Pack of 50 Sheets — £52.95

STAR PRINTER ACCESSORIES:

Star LC-20 Mono Printer
Automatic SheetFeeder — £74.95

Star LC24-10 Mono Printer
32K Buffer £67.95 — £67.95
Automatic SheetFeeder — £74.95

Star LC-200 Colour Printer
Automatic SheetFeeder — £74.95

Star LC 24-200 Mono/Colour Printers
32K Printer Buffer — £34.95
Automatic SheetFeeder — £74.95

Star SJ48 Printer
Automatic Sheet Feeder — £54.95
Ni-Cad Battery — £39.95

Star XB 24-200 Colour Printer
Pull Tractor — £34.95
Font Cartridges - Styles To Be Announced — £29.95
128K Centronics Printer Buffer — £89.95
Automatic SheetFeeder — £114.95
Dual Bin SheetFeeder — £429.95

Star XB 24-250 Colour Printer
Pull Tractor — £34.95
Font Cartridges - Styles To Be Announced — £29.95
128K Centronics Printer Buffer — £89.95
Automatic SheetFeeder — £174.95
Dual Bin SheetFeeder — £469.95



GENUINE CITIZEN & STAR REPLACEMENT PRINTER RIBBONS

PRINTER	PRINTER TYPE	BLACK RIBBON	BLACK RIBBON 'SIX PACK'	COLOUR RIBBON	COLOUR RIBBON 'SIX PACK'
CITIZEN 120D+	BLACK ONLY	£4.95	£24.95	N/A	N/A
CITIZEN 124	BLACK ONLY	£4.95	£24.95	N/A	N/A
CITIZEN SWIFT 9	BLACK/COLOUR	£4.95	£24.95	£16.95	£99.95
SWIFT 24/24E/224	BLACK/COLOUR	£4.95	£24.95	£16.95	£99.95
STAR LC10/20	BLACK/COLOUR	£4.95	£24.95	£6.90	£36.50
STAR LC200	BLACK/COLOUR	£6.95 ZX9	£36.95 ZX9	£12.95 ZX9CL	£69.95 ZX9CL
STAR LC24/200	BLACK/COLOUR	£8.95 Z24	£49.95 Z24	£14.95 X24CL	£74.95 X24CL
STAR XB RANGE	BLACK/COLOUR	£8.95 Z24	£49.95 Z24	£14.95 X24CL	£74.95 X24CL
STAR SJ48 INK CARTRIDGE	BLACK ONLY	Also compatible with Apple Stylewriter and Cannon BJ10E Bubblejet			£14.95ea.

BOOK SHOP

FOR BEGINNERS & EXPERTS ALIKE



WE ALWAYS CARRY LARGE STOCKS OF THE FULL RANGE OF ABACUS & OTHER BOOKS...Phone us for details!

AMIGA FOR BEGINNERS - VOL. 1 ABACUS BOOKS, — £14.95
From unpacking your Amiga to creating your own icons, includes first use of basic and extras disk. NEW revised version covering workbench 1.3 and 2

AMIGA BASIC INSIDE AND OUT - VOL 2 ABACUS BOOKS, — £18.95
Definitive step by step guide to programming Amiga's in basic.

AMIGA MACHINE LANGUAGE - VOL 4 ABACUS BOOKS, — £14.95
Practical guide to learning 68000 assembler language.

AMIGA DOS INSIDE AND OUT - VOL 8 ABACUS BOOKS, — £23.45
Guide to Amiga DOS & CLI. NEW Edition inc. WB 2.0 (includes Free Help Disk)

AMIGA HARDWARE REFERENCE MANUAL-Addison Wesley, — £21.95
Written by technical experts at Commodore Amiga Inc, USA... the people who designed your Amiga. Hardware level machine code programming at advanced level. New revision now also includes Kickstart 2.

AMIGA, BEST OF TRICKS & TIPS Vol. 17, — £32.95
A complete set of tricks and tips that enable you to do MORE with your Amiga and as simply as possible. (Includes Free Disk)

GETTING THE MOST FROM YOUR AMIGA, — £9.95
From Future Publishing, the producers of Amiga Format Magazine and fully updated for 1992 OR...
available with 2 HELP DISKS INCLUDED — £13.95

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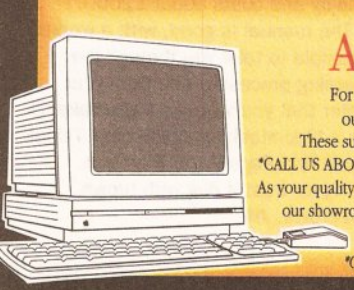
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continued from page 59

graphics close to the bottom of the page, and the top of the page on the screen is pushed down one inch.

I have made sure that the page size is set to A4 in Preferences. I use the HP_DeskJet driver with page type set to...

Simon Putland
Wadsley, Sheffield

Stop right there, Simon, this is a well known problem. The trouble is that the HP_Deskjet printer driver has an 8in by 10in restriction for printing graphics, which is what you are doing from *Professional Page*. Well, to be accurate, it's actually a 2,400 dots by 3,000 dots at 300 dpi restriction.

Don't ask me why; I guess it's because it was written in America where they use funny sized paper.

The reason ordinary text prints down to the bottom is because it is ordinary text, not graphics, so the 2,400 dots by 3,000 dots restriction doesn't come into it.

The solution is to avail yourself of a driver that has this graphics printing area restriction removed, and you can get one from *Just Amiga Monthly* on ☎ 0895 274449 for the price of a shareware Jamdisk. ***JW***

WANT MORE FONTS?

Where can I get some more Compugraphic fonts for use with my *PageSetter II*?

John Burgin
Lincoln

The first pack to buy, and the best value, is something called the *Outline Fonts Pack* which contains 35 fonts made up of Bold, Italic and BoldItalic versions of about eight classic typefaces, plus a fancy font and a couple of symbols fonts. If you can't find it in the mail order adverts try HB Marketing ☎ 0753 686000.

As well as that pack there are about a dozen more Compugraphic fonts available. These have to be bought singly and work out much more expensive – so expensive that I don't think any UK distributors have imported them from the States, but you could ask HB Marketing about them while you're on the phone. ***JW***

RAM RETRACTION

I have an Amiga 500 with Kickstart 1.3 and fatter Agnus, and have been using *Deluxe Paint IV*. It's a very memory hungry program, so I bought a 2.5Mb upgrade, configured to 1Mb Chip RAM and 1.5Mb Fast RAM.

Now, whenever I use *DPIV* in hi-res mode every other page is corrupt and then the computer Gurus. Would upgrading to Workbench 2 solve my problem?

S Oswin
Denton, Northants

Your board is faulty. Commodore does not recommend using any board that fits in the trapdoor expansion that carries more than 512Kb of RAM. This is because some are very unreliable and some simply do not work on certain Amiga configurations. I'm afraid you have found one of these, and Workbench 2.0 will make no difference. ***JR***

WHICH SEQUENCER?

I own a year old A500, Kickstart 1.3 and WB v1.3.2 with a 0.5Mb upgrade. I have an external dual drive from Power Computing (chosen from your review) and the *Audio Engineer* sampler. I originally purchased my Amiga to make music, and also to use for homework, but after wasting £99 on the useless *Music-X 1.1* and gaining nothing from *Sequencer One*, I am close to giving up.

I am delighted with the *Audio Engineer* package. It is easy to use and gives fantastic quality. My problem is that I cannot sequence my samples with it, and have been unable to find a program that can do so. I have a MIDI drum machine (Alesis SR-16) and want to slave this to a sequencer, and add my samples over it. The problems arrived with *Music-X* because my samples are quite long and they are looped, a guitar break for instance, while the sequencer only plays a crash cymbal. Also, I usually sample at about 21000 samples a second and after converting to *Music-X*'s rate of 8363 my samples sound grainy and useless.

Ideally, the sequencer I am looking for fully supports internal IFF sounds, and can also slave MIDI equipment. I also hope to link the Amiga and drum machine to a four-track recorder. All the sequencers I have looked at are high-level MIDI versions that are aimed at keyboard users, with little or no support for internal sample users. I'm beginning to wish I'd bought an Atari, simply because of the better software support. Please advise me of the closest sequencer for my needs.

Shane Daly
Finchley, London

If you are looking for future SMPTE support then I suspect that you are going to have to go for one of the heavyweight MIDI sequencers regardless of the fact that your MIDI requirements are minimal. You've probably already looked at *Bars&Pipes Professional* but you may not be aware that there is a range of 'Add On' tools including one specially made for internal IFF sounds support. I've not actually used it but have been told that it provides high and low fidelity sample-play options, fine tuning and a host of other useful goodies. The disadvantage of this path would be that *Bars&Pipes* is quite expensive (especially since the add-on sounds package alone will put another £60 or so onto the basic sequencer price anyway). You are also likely to need additional memory in order to create a useful set up.

In its favour is the fact that *Bars&Pipes* is very powerful and, when you get into SMPTE tape-recording work, *Bars&Pipe*'s facilities will prove very useful. This sequencer does of course provide all the MIDI facilities you are likely to need. One other thing... since you are unhappy with *Music-X* it might be useful to talk to Zone because the company was doing deals for users swapping from *Music-X* to *Bars&Pipes*. It will also be able to give you up-to-date details of the *Bars&Pipes Internal Sounds* add-on package and tell you exactly how much memory is going to be needed to tackle the types of samples you are involved with. Zone Distribution is on ☎ 081-766-6564. ***PAO***

ON YOUR MARKS

After reading your DTP article last month and seeing the results possible with *PageSetter II*, I've decided to invest in a cheap DTP package. The one I intend to buy is *PageSetter II*. I would be grateful if you would answer my questions:

a) Does it use AGFA Compugraphic fonts for screen and printout?
b) How many of these fonts are supplied, and what sizes?
c) What graphics formats will it import? I would like to use TIFF, from the school's Logitech scanner.
d) How fast does it run? Will it be bearable on my 512K graphics RAM, 512K expansion RAM, dual floppy drive Amiga 500.
e) What is the printout quality on 9-pin, 24-pin and laser?
f) Is the manual comprehensive?
g) Could you give me any other information which may be of help?

Kevin Bewley
Connahs Quay, Deeside

a) Yes.
b) Two are supplied: Times and Triumvirate. CG fonts are re-scalable and *PageSetter II* enables you to re-scale them from 4pt to 127pt. You can also make them Bold, Italic, Outline, Shadow and Underline, and fill them with different fill patterns from within *PageSetter II*, so there's plenty of styles to be going on with.
c) It will import standard Amiga IFF ILBMs up to HAM (4,096 colours), plus *Professional Draw* 'clips'. If you need to import TIFF you will have to convert them to IFF first using a utility like *Art Dept Professional* (which isn't cheap!), or there are one or two shareware conversion utilities that might do the job.
d) The speed will be bearable, but you certainly can't call *PageSetter II* fast. However your main problem is memory. 1Mb is the bare minimum it needs to operate in, so you'll have very little memory left for creating documents. You will definitely need to invest in more memory, at least a couple of megabytes to be sure.
e) Come on! The better the quality of printer, the better the quality of printout. If you're looking for a cheapish printer that gives better results than its price suggests, look no further than the Canon BJ-10ex bubble jet, which does 360 by 360 dpi graphics that are almost laser quality and costs about £200.
f) The manual is good, with a worked example to take you through the learning process. I see from your letter that you've used *Pagemaker 3* on a Macintosh, in which case I think you'll find *PageSetter II* a cinch.
g) Never trust a dog with brown eyebrows. ***JW***

JARGON BUSTING • JARGON BUSTING

Agnus chip – The custom chip dedicated to graphics. The first three versions - 8361, and the 8370 and 8371 Fat Agnus – can access 0.5Mb of Chip RAM. A later version, 8372a, can access 1Mb; while the ones used in A500 Pluses and A3000 can access 2Mb.

Chip RAM – The area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally it was a maximum of 512K; newer machines fitted with the fatter Agnus graphics chip can access 1Mb, allowing smoother animations and more screens to be displayed at once. The A500 Plus comes with an Agnus which can address 2Mb of Chip RAM.

Fast RAM – Any extra memory which is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its own accesses, Fast RAM is faster.

SMPTE – Society of Motion Picture and Television Engineers - this is a time coding used to synchronise video with MIDI signals.

WIN!

Tear out this page immediately!

That's right – tear it out and throw it in a post-box. But don't forget to fill it in first. Because you just might win yourself up to £1,200 worth of RAM expansion. We have 20 of these to give away, courtesy of memory purveyors WTS Electronics. So what's it all about? The Amiga Shopper Show, Wembley, May 15-17 that's what. We want to make it the only place for serious users to be this year. So why not complete the form and let us know what you want to see...

Yes, the *Amiga Shopper Show* will be taking place at the Wembley Exhibition Centre on May 15, 16 and 17. As well as exciting new releases and unbelievable bargains, we'll have a whole load of seminars to help you get even more serious about your Amiga.

There will be opportunities to talk to the editorial team and have *your* say on where *your* magazine is going. Of course, our expert panel will be there too, providing solutions to all your technical queries. And we'll be inviting a number of guest speakers to come along to demonstrate specific items of hardware and software in use.

To help us make this *the* Amiga show of the year, why not take the time to fill in the form and tell us what you want to see?

On which of the following subjects would you like to see forums:

❑ Desktop publishing
❑ Video
❑ MIDI and music
❑ Programming
❑ Business software
❑ Education
❑ Workbench and AmigaDOS
❑ Communications

Please list the three companies you would most like to see exhibiting new products at the show:

1) ______________________

2) ______________________

3) ______________________

Now list the three products (hardware or software) you would most like the manufacturers to provide a Question and Answer forum on:

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3) ______________________

At any rate, please fill in your name and address in the space provided below so that we can call your name and give you your prize during the show!

Name

Address

Postcode

Please tick here if you do *not* wish to receive direct mail from other companies

❑

AMIGA SHOPPER SHOW SPECIAL QUESTION

Go on – ask us a question, any question, and you *could* win a prize. As part of our on-going bid to make this the best Amiga show ever, we're going to have our expert panel hosting *Amiga Answers* forums during all three days. But there's one thing that *Amiga Answers* needs, and that's a whole lotta questions – so get writing. We'll be drawing your submissions out of the Editor's extremely huge baseball cap at the show, and if you're there when we do you'll be walking away with a fabulous prize from WTS Electronics: there's four 2Mb AX500 expansions up for grabs, four 1Mb trapdoor expansions, and twelve 0.5Mb trapdoor expansions.

Oh, and don't be put off by the thought of your question becoming lost among the deluge – any which we don't get around to answering at the Show will be dealt with in the *Amiga Answers* section of forthcoming issues.

OK, I get the picture, what I'd really like to know from you chaps is...

WIN LOADSA MEMORY – *FREE!*

5 TOP TIPS FOR GETTING THE MOST OUT OF THIS PAGE...

- **Answer the questions**
- **Fill in your special Show section**
- **Tear out the page and fold it up**
- **Chuck it in the post**
- **Come to the Show. Job done**

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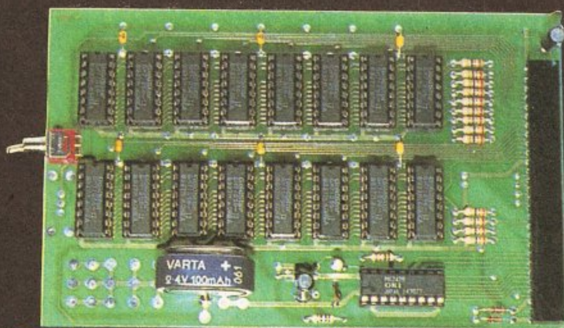
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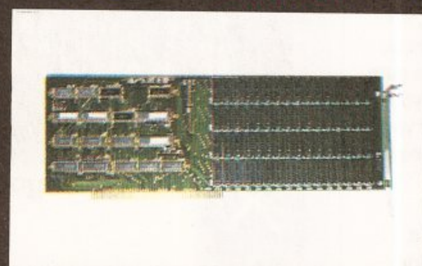


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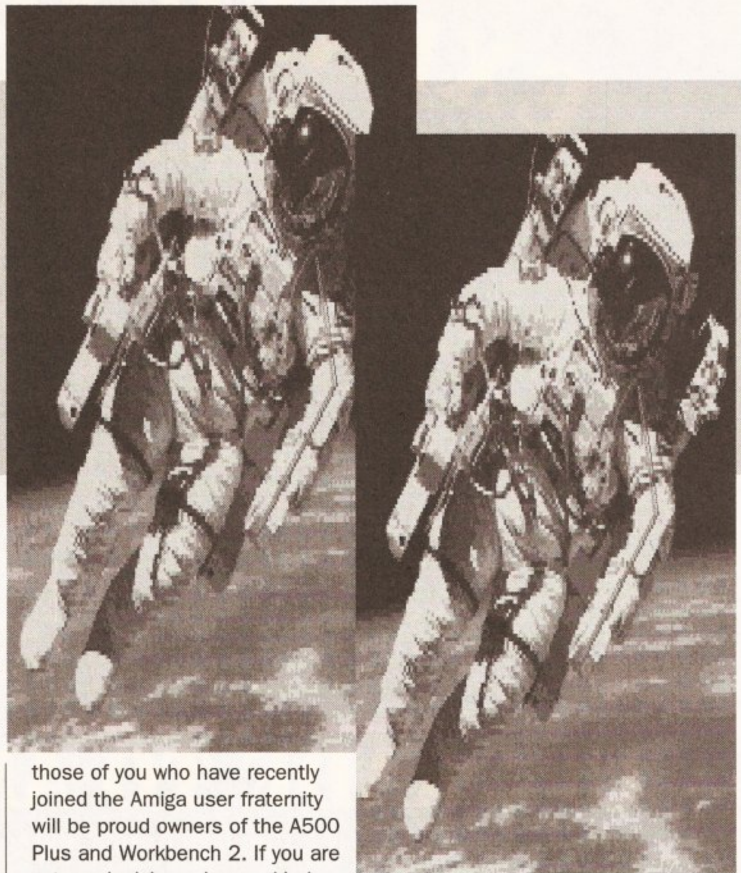
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Education Forum

Our new educational specialist, Wilf Rees, reports on new software to take you to the top of the class



Welcome to a new look, and I hope, interesting format to our education feature. As you can see from the credit at the top, my name is Wilf Rees, and I am one of those chalk-face workers, all you students out there know and love. I work in a High School up in the beautiful county of Northumberland, and like all of you addicts, I'm another owner and user of an Amiga. What's more important though, is that I also use Amigas every day at school, and over the last four years have developed a huge admiration for the machine, as well as a pretty fair level of competence in making the Amiga stand up and beg!

The machines we have are used constantly for just about every conceivable application. My job as a faculty head covers responsibility for all of the creative subjects in the curriculum, including 'Technology', so the range of uses covers Music, Art and Design, CDT, Home Economics, Expressive Arts and PE. Now I'm sure many of you Amiga owners use your computer in your studies, and if you don't, then it's time you did! I know from the contacts I have with Commodore UK that all sorts of brilliant things are happening out there, and that the Amiga is being used in more and more schools, as teachers come to realise how versatile it is.

FUTURE INSTALMENTS

Bearing this in mind, what I really want to happen in the education feature each month is to, some extent, going to be dictated by you. If you are using your Amiga for school projects or assignments, and you are pleased with the results, then I want to hear about it. It doesn't matter which subject in school or college your work is for or how sophisticated the outcome was, bung the results on a disk, along with a description of what the work is and send it to me at the usual *Amiga Shopper* address.

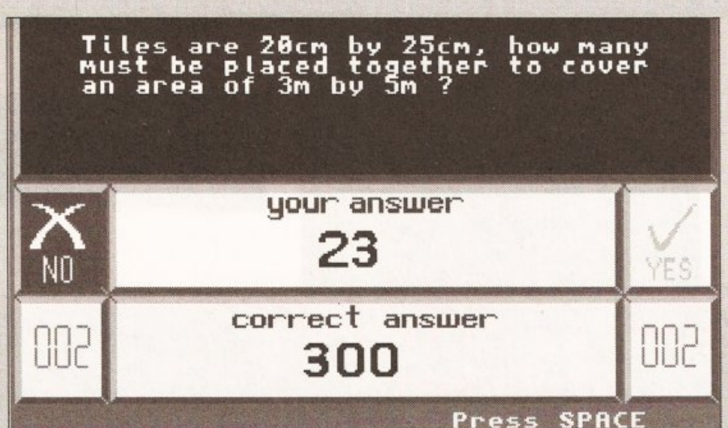
In future months I want to give you the chance to see your work published, and hopefully we can all learn new ideas, skills and applications for our favourite machine.

Are any of you using your Amiga for composing music using MIDI? I think we've crossed most of the major hurdles in my school and use the Amiga extensively in Expressive and Performing Arts for this application. How are you getting on? Write and tell me. We use *Music-X* and *Soundtracker* as well as *DeLuxe Music*, and we have a lush collection of assorted expanders and MIDI devices. What do you use, and how successful have you been?

TAKE THE CONTROLS

I would particularly like to hear from any of you who are using your Amigas for 'control' in any school applications. The serial port has a multitude of uses and is particularly suitable for controlling external devices such as robot arms, turtles, systems, networks etc. Have you written any control software to operate such devices? No doubt those of you who have recently joined the Amiga user fraternity will be proud owners of the A500 Plus and Workbench 2. If you are extremely rich, and some kind relative bought you a 3000, then you will also be in the same fortunate predicament of owning Commodore's latest innovation which slipped into the UK without much of a song and dance.

The AmigaDOS manual is now an optional extra with Amigas (And some would say best left at that, including me!). What you might have, however, particularly if you have access to a 3000, is a wonderful communication language known as Rexx, or ARexx in its Amiga form. Perhaps some of you have started playing around with it? A good pal of mine is a systems consultant with IBM (whoops musn't advertise), and he never stops going on about it. It would appear that they think it is brilliant and as it happens, so do I, principally for two reasons. Firstly it is highly structured and, once you start using it, not too complicated to learn. Secondly, it is universal in that it can move from one machine to another allowing very powerful commands to be executed quickly and effectively. My son did his work experience at, go on then, IBM, and the principal advice he seemed to come away with was, "If you don't know Rexx, then learn it, it's the language of the future!" I would like to see any applications anyone has written in ARexx. These really would qualify for serious Brownie points!



***Maths Adventure* – this screen shows the presentation of questions and the indication of success. Great shame they didn't spend more energy on improving the database of questions instead of in different games**

GOODIES GALORE

To encourage you to get your examples off to me, I spoke to Peter Talbot, Commodore's Education Supremo, who has promised me some goodies which I'll award to the most outstanding project sent to me each month, so get to it and let's see what you are up to. As education software comes on to the market, I will be looking at it and giving you the rundown on its performance. I will also be reviewing hardware from an educational applications point of view. For example, in next month's issue, I am going to look at the budget digitiser market, check out price performance, and consider how we can use their features to liven up coursework assignments. This month I have three pieces of software to report on; quite different in their sophistication, but sharing a strong emphasis on the learning process.

REVIEWS

MATHS ADVENTURE

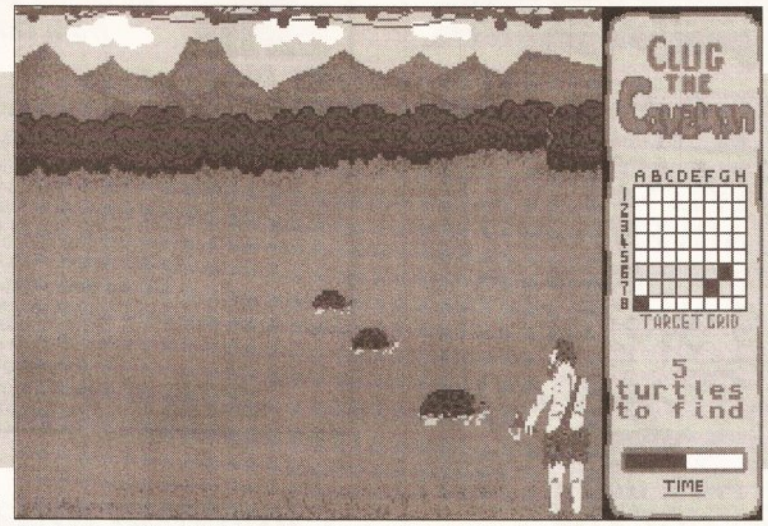
Maths Adventure is another of the continuing sequence of programs designed to help students with national curriculum subjects, and in this case the topic is maths, ages six to fourteen. Initial loading provides a display screen, and background music which must rank among the worst I have ever heard, having both asynchronous tracks and discordant melodies. Once the music has finally reached its awful climax, we are presented with a name and age requester screen followed by an assorted list of topics from which you can choose to answer questions and whether you would prefer an increasing difficulty level. It asked me the questions in a very clear way, displaying how many questions I had correct and incorrect. There did seem to be some confusion regarding attainment levels, for example the 10-14 age group asked: 1 + 6 = ? , followed by: 22.7, 17.85, ??, 8.15 where the task was to find the missing number in a sequence. Some of the questions were even repeated, casting doubts on the size of the database. I also got annoyed with the way in which the answer had to be entered. Unless the response was entered in precisely the acceptable way, the response was an 'incorrect' reply, even when it was not obvious that this was the case; not an appropriate way of dealing with a 10-year old who isn't too familiar with a computer.

Completion of a block of questions gives the user access to a game, and this pattern continues through four different games. The games included with this package

> **"The adventure is enjoyable and challenging, requiring taxing powers of concentration."**

were nicely illustrated and coupled with sound effects, although the animation was occasionally jerky. A game could be played after completion of a set of fifteen questions. The first of these was *Clug the Caveman* which involved helping a caveman cross a river by stepping on turtles, which were submerged, so, the pupil has to click on a grid to find a turtle, which would surface when found.

Once a line of turtles is found, Clug can happily scamper across the river. It might have been more



Here we see Clug the Caveman desperatly trying to force the turtles to surface in the first part of *Maths Adventure*. Once the row of turtles has been found, Clug can scamper over the river by running on thir backs

appropriate to have included a lesser element of 'chance' at this stage, as failure to guess the correct grid reference required returning to the next sequence of questions, and having to go through the whole process again. The second game involves repeating an increasingly complex sequence of generated shapes to gradually feed the hungry wizard (named Wilf!). I particularly liked this game, it was both enjoyable and challenging and required taxing powers of concentration.

The third game is based upon an Indian hitting a target with a bow and arrow; the pupil has to give elevation, bearing, and power. The test ends with an arcade-style shoot 'em-up game, lacking the attentive qualities of the previous three.

The manual which comes with the software is adequate in explaining its use, but little more than that. It looked rather flimsy, and cheaply produced. I thought the idea of including a government publication on maths in the national curriculum a little crafty. I suppose it might give the software some enhanced credibility to a potential parent buyer, but really served no purpose in improving the quality or effectiveness of the package.

As a maths revision facility, considerable more energy might have gone into the provision of a much larger database of quality questions, rather than four fairly average games. I acknowledge the author's intentions of trying to create a program which offers platforms based on enjoying playing games as rewards for achievement, but in trying to achieve both, I feel the software succeeds in accomplishing neither very successfully.

MICROMEASURE

Occasionally, a piece of software comes along, and it stops you in your tracks, thinking about the possibilities of what you might be able to do with it. *MicroMeasure* falls into this category. It requires a genlock to make it work, as well as a video camera. What it does is basically very simple: by superimposing video information on to a calibrated screen, all forms of measurement can be taken.

The software was originally developed as a research tool for insect behaviour studies at Wye College, part of London University. It has now been expanded to incorporate measurements applicable to a much broader range of topics. The behavioural element is still there allowing quantitative studies of behaviour, movements and events to be made simply and quickly. This is done by simply pointing the mouse at the respective points on the screen and clicking. The Amiga can then record and

•EDUSPEAK•

Each month I want to take a close, but I hope simplified look, at the various consequences on you, of the 1987 Education Reform Act, with specific reference to Information Technology.

This month we are going to see what it means in 'Technology'.

As you no doubt know, there has been great upheaval in education in the last few years, the principal cause of which was the aforementioned act. This act decided that all students between the age of 7 and 16 have to follow a specific curriculum. That is, everyone has to study a defined list of subjects. These subjects are planned out over the years you spend in school, starting with Key Stage 1 (up to 7 years old) Stage 2 (7 to 11 years old) Stage 3 (11 to 14 years old) and Stage 4 (14 to 16 years old). Each subject is divided into Attainment Targets (ATs), and each AT has 10 levels of achievement. What this means, is that as the act comes into force over the years, and it's due to reach year 11 (13 year olds) in September, schools are required by law to provide certain experiences.

'Technology'. which is a 'foundation subject' (everyone has to do it!), has five ATs, the fifth one is called, "Information Technology Capability." The levels gradually increase in complexity from:

● Key Stage 1 Level 1

"Pupils should be taught:

• that information technology can be used to help plan and organise ideas in written and graphic form."

● to Key Stage 4 Level 10

"pupils working towards level 10 should be taught to:

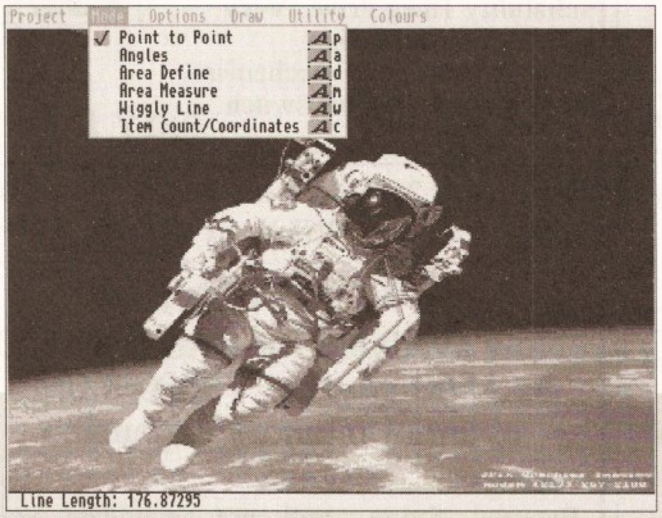
• analyse systems to be modelled using Information Technology, make choices in designing, implementing and testing them and justifying the methods they have used." (Extracts from "Technology in the National Curriculum" Dept of Education and Science.)

So you can see there is quite a range of capability and understanding. Remember these are your entitlements by law, and I suppose having an Amiga at home helps you get ahead, and achieve those higher levels quicker than most!

•EDUSPEAK•

calculate the distance moved, based on the calibration entered by the user. Areas are handled in the same way. A boundary is drawn around the desired area, and then clicking on it records its area. Dynamic measurements are possible, simply by moving the mouse over the object as it moves around the screen. This feature can record paths or time.

What is particularly exciting about this software are the possibilities it opens up for so many other applications. Point a video camera at a map, set the calibration according to the scale of the map, and then purely by clicking, distances can be calculated either as the crow flies or by following roads on the wonderfully described 'wiggly line' option.



Using *Micromeasure*, you can calibrate just about anything. You do need a genlock and a video source, but once acquired I think you will find this software is limited only by your own inventiveness

The ability to use either 'real-time' or recorded information enables many options to be utilised repeatedly. Imagine being able to train at throwing the discus; your best throws when recorded could be scrutinised according to angle measurement and body alignment. Optimum performance could be achieved through close scientific analysis. It could actually be set up to record long-jump performances, showing height, time of flight in the air, and distance achieved. Alternatively a group of dancers could be used to investigate how successfully a group dance was working out together.

Using *MicroMeasure* couldn't be more easy. Pulldown menus and requesters make the whole control system very easy and the help facility provides support for any difficulties. Full palette control and colour display options are available, and once a sequence of measurements has been completed, then a data screen collates and presents all the information in a clear precise way, ready to be sent to the printer.

> ***"MoG enables users to build and manipulate molecular structures."***

I would like to be able to comment on the quality of the manual, but Wye College only sent me a demo version of the disk, and very little documentation to support the program with no manual. This is a superb piece of software which deserves a place in any school. I suspect, that while its origins and proposed applications may lie in the sciences, it will find its way into all manner of curriculum areas, the applications to which it is put will only be restricted by the inventiveness of the user.

MOG

MoG, Molecular Graphics Software, is a molecular construction facility which allows users to build and manipulate molecular structures, subsequently measuring or changing torsion angles. The constructed molecule can be rotated about any axis, zoomed in or out, scaled or moved around the screen. Individual atoms may be labelled by clicking on them, and distances between individual atoms can be measured. Structures can be modified by breaking or creating bonds to develop molecular structures into more sophisticated or simpler molecules.

'Colourset/Set' allows the colours of bonds to be defined as pen numbers, using atom or amino acid types, amino acid residue ranges, or specific links between two atom types.

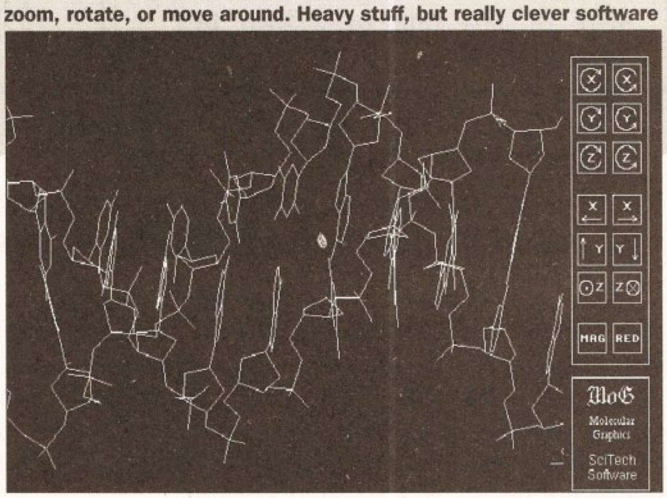
An Asterisk may be used as a wildcard when specifying atom types, e.g. H* will define all hydrogens. A function labelled CPK provides the user with the option to either preview the image of the molecule as a quick rendering or, alternatively, to start a full blown ray-tracing of the molecule in user-defined atom colourings. Two examples are supplied of traced molecules, both of which are extremely impressive. *MoG* is an extremely sophisticated and very technically oriented piece of software, relevant to students in year 12 and beyond. It does have one or two characteristics which would benefit from consideration and, after speaking with the authors who sent this software to my school for evaluation, I understand these are to be incorporated. The version I inspected only worked in interlace, and the flicker drove my eyes scatty. It was also possible to create molecules which did not exist, just by adding bonds, or linking existing structures together.

Unless you have an accelerator card, the full ray-tracing can take hours to complete, and while the outcome is superb, you will be without your Amiga for a considerable period of time. This is the software you need if you are heavily into molecular chemistry. It certainly enables students to comprehend the intrinsically complex nature of 3D molecule structures, and presents and manipulates them in a friendly, uncomplicated way.

A second disk is distributed free with *MoG*, called PLT. It is an AmigaDOS device handler which interprets HPGL files, and sends them to any preferences supported printer.

That completes the reviews for this month, I hope you found the information useful. If you would like any particular info on any of these packages, then contact me, and I will try to assist. AS

MoG*, a molecular graphics package – when you have created an entirely new molecule, you can use the gadgets on the right to zoom, rotate, or move around. Heavy stuff, but really clever software



SHOPPING LIST

Maths Adventure £25.99
by Kosmos Software
1 Pilgrims Close, Harlington
Dunstable Beds. LU5 6LX
☎ 0525 53942

Micromeasure £495
Discounts: Universities..................£295
Schools.....................................£99.00
by Wye College, University of London
Ashford, Kent TN25 5AH

MoG.................................... £100
Discounts for schools, students.........£60
by SciTech Software
23 Stag Leys
Ashtead, Surrey
KT21 2TD
☎ 0372 275775
Demo disk available at £3

If you feel there is an aspect of your studies that is not adequately addressed in *Amiga Shopper*, write and tell me, and hopefully we can put that right. Are you trying to carry out any particular application, or struggling with a piece of hardware, and banging your head against the wall? Let me know, If I can't answer it myself, then I'm sure I can find out. Remember, I'm talking educational applications. I can't really get you past level 2 of *Robocop 3* ! (Actually I probably could, because the two principal authors of *Robocop 3* only left my school last year, and went directly to the software house to work on writing it!), but that's not what we are about in this section of our mag.

A Board of Many Colours

Gary Whiteley looks into GVP's new IV-24 card and TouchWindow, the alternative to the mouse...

GVP's Impact Vision card for Amiga 1500, 2000 and 3000 computers was launched in the UK at the World of Commodore show and was being hailed as a major tool for the Amiga video user, producing professional quality video output, with Picture-In-Picture, three bundled software packages and a host of other features.

I'd been eager to take a look at the IV-24 and now I've got one fitted in my Amiga 2000 I can give you a tour around the pros and cons of this new video display device bundle.

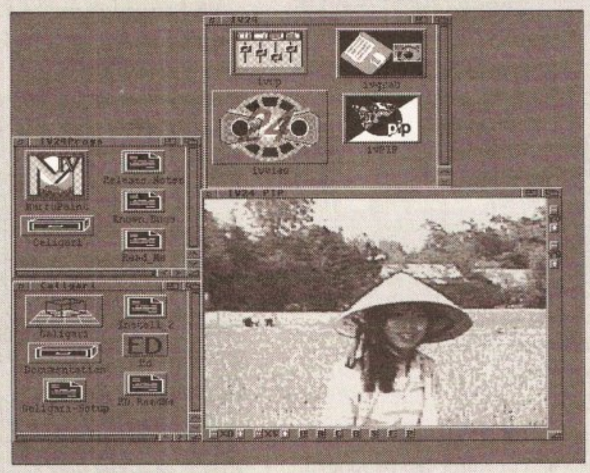
DUAL FITTING

The IV-24 board will fit inside either an Amiga 1500, 2000 or 3000, though there are differences between the 1500/2000 and 3000 fittings. If you have an Amiga 3000 the IV-24 plugs directly into the Video slot and its adjacent Zorro slot. With an Amiga 1500 or 2000 installation is more difficult as the IV-24 has to be plugged into both an empty Zorro slot *and* connected to the video slot. If you are concerned about your warranty then this may be a job for a qualified engineer, as it entails temporarily removing the power supply, plugging an optional adaptor into the video slot and then connecting a wide ribbon cable into the IV-24. This may also mean temporarily removing any other expansion cards and possibly rearranging them to accommodate the new cable and card. I was a tiny bit worried about the bend that I had to put into the IV-24 ribbon cable so that I could fit both my SCSI controller and 8-UP memory board back into place, but it all worked OK, so no problem.

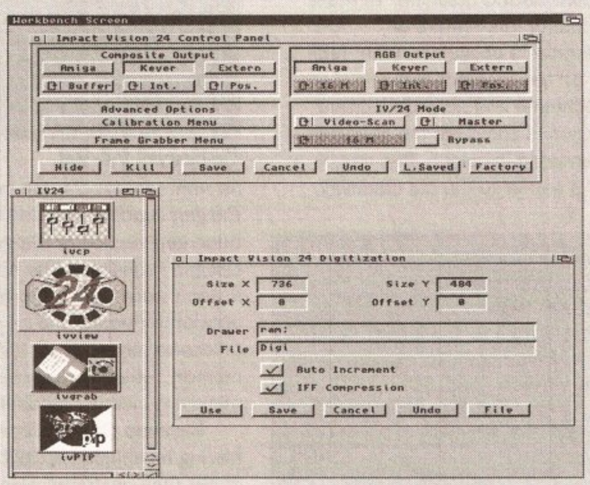
There were no additional problems when I plugged in the GVP turbo card a bit later.

Once the IV-24 is fitted it has to be connected up to video inputs and outputs. On the rear of the board are two separate multipin connectors for video, syncs, key signals and so on. You are supplied with a multi-way plug which has flying connections for RGB input, Composite Video In and Out and S-VHS (Y/C) Output. Other configurations, such as RGB output, are possible, but will require some soldering of your own. Although details of the connectors are given in the manual there is no real explanation of how to use them, which was annoying. Usually I'm not scared of building a lead for myself, but in this case the information was too vague. You'd have to be very sharp or rely on technical support if you wanted to build your own lead.

On the rear of the board is a three-way switch, providing hardware settings for the video mode of the IV-24. Genlock causes the IV-24 (and Amiga) to slave to an external sync pulse or video signal, Master sets the IV-24 as the master timing device and Bypass simply passes the video through the IV-24 with no effect at all.



The Impact Vision card comes with a program called IVPIP for configuring pictures within pictures



When you've installed the board and its control software, you use the IVCP (control panel software) to configure the system to your needs

BROADCAST QUALITY

Unlike NewTek's Video Toaster the IV-24 does not require Time Base Correction to be used to stabilise incoming video signals – there isn't any desperate need for this, unless you require optimum quality, as the IV-24 can't do any of the vision mixing tricks that the Video Toaster is capable of. This means that although video can be input directly to the IV-24 the quality will only be as good as that of the incoming signal. Don't expect broadcast quality if you feed the IV-24 with non-TBC'd VHS signals. But if you push full-spec, TBC'd broadcast quality video into the board then the output will also be of broadcast quality. There is no quality loss to a video signal when it passes through the IV-24. Note that broadcast quality is only available when the board is running in Genlock mode – ie the timing of the Amiga is being driven by pulses derived from the video signal – not in the Master mode, where the IV-24 is controlling the Amiga clock.

SETTING UP

Once the board and control software are installed you must configure the system to your requirements by using the IVCP (Impact Vision Control Panel) software. IVCP not only allows the setting up of parameters for the composite and RGB video outputs from the board (Amiga, Video, Key settings, 4096/16M colours, Genlock or Master mode, Video Frequency (15 or 31MHz) and Bypass) but also two further requesters for Calibration and Frame Grabber (of which more later). Then it's time to check out...

SHOPPING LIST

Impact Vision 24 .... £1799
RGB Splitter .... £????
(unknown at time of going to press)
GVP 68030, 68882, ... £1799
50 MHz accelerator, 4Mb 32-bit RAM
by GVP Inc

Distributed in UK by:
Silica Systems, 1-4 The Mews,
Hatherley Road, Sidcup
Kent DA14 4DX
☎ 081 309 1111

CHECKOUT IMPACT VISION 24

Documentation ●●●○○
General, needs more specific instructions.

Quality ●●●●○
Overall high quality.

Features ●●●○○
Plenty of features, in need of improvement.

Price ●●●○○
Poor relative value of bundled software.

Overall rating ●●●●○

If the rough edges were smoothed out, better software bundled and an RGB splitter included then the IV-24 would have a better chance of making more friends.

THE BUNDLED SOFTWARE

Macropaint IV-24

First impressions are the most lasting, though if that's true then I wouldn't like the first impressions I had of *Macro Paint IV-24* to be forced on anyone else. But let me explain.

The version of *Macro Paint* which arrived with the IV-24 was labelled "Gamma 5 Version", which means that it isn't finished! And that's an understatement – it was extremely buggy. I soon received the latest release (Gamma 5.7), which is a lot more stable, though still prone to mysterious lock-outs and weird hangs. But at least most of it now works, and in PAL! There's even a long list of bug fixes, known bugs and future additions. So it looks like there's plenty work to do yet.

Like most self-respecting paint programs *Macro Paint* has a lot of standard tools – brushes, shapes, lines, fills, text, airbrush, tint, rubber-banding etc – though there are still some glaring deficiencies such as no freehand and polygonal fill drawing, perspective or brush wrapping, all features which would help make the program much more versatile.

But as it now stands *Macro Paint* is pretty easy to use. All functions can be accessed through the menu bars or keyboard shortcuts. There's also an easy to use palette system. Any IFF picture file can be loaded, including HAM, SHAM, Dynamic Hi-Res and, of course, 24-bit files. *Macro Paint* can also load and save in the Rendition format used by Caligari, though the only IFF format it can save is IFF 24 standard. 24-bit brushes and palettes can be loaded.

While 'real-time' painting is possible it's slow and jerky on a standard 68000 machine. To make the most of this feature an accelerator is obligatory. With 'real-time' off the program draws in monochrome and after the current operation is complete the changes are rendered in colour. This can be a bit of a barrier to the old creativity.

For all its current drawbacks *Macro Paint* has some powerful functions and, once I'd learned how to get round the menus, I did enjoy myself – even if I did little more than the electronic equivalent of sophisticated finger painting.

Macro Paint has some unique features. Like Region effects, where a pre-defined rectangular or lasso-bounded region can be altered (tinted, flipped, darkened etc) while the rest of the image remains untouched – great for colourisation effects. Then there's Halftoning, which provides a transparent look by drawing only half of the pixels of a stamped brush. Not earth-shatteringly brilliant, but useful.

Macro Paint can accept ARexx commands on several levels from external programs, menus or buttons in the *Macro Paint* tool box. By passing such commands to *Macro Paint* any function of the program can be addressed and operated by another program, such as *Digi-View* or *Art Department Professional*.

I look forward to seeing Macro Paint in its final form as I reckon that with a bit more work it will become a very useful 24-bit paint program.



Like many paint packages, *Macro Paint* has a range of tools for painting and manipulating a picture. An easy to use colour palette is a plus, and *MacroPaint* can load all normal Amiga picture formats

Rumour Corner • Rumour Corner

Word has it that the new version of *Art Department*, known familiarly as *ADPro 2*, has direct support for IV-24 to display 24-bit images.

Rumour Corner • Rumour Corner

CHECKOUT MACRO PAINT

Documentation ●●●●○
Best of the bundled bunch.

Quality ●●●●○
24-bit hence high quality.

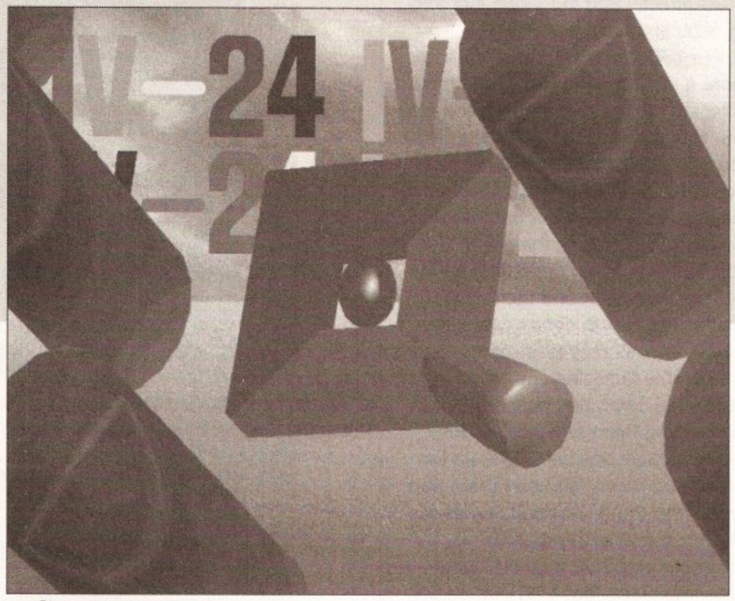
Features ●●●○○
Still lacking some crucial tools.

Speed ●●●○○
Really needs an accelerator and loads of RAM for sensible use.

Overall rating ●●●●○

Adequate, but needs improvement for serious applications.

With Gourad, Phong and Flat shading, background image loading (in Caligari Rendition format) and a selection of primitive objects it is possible to get good results from *Caligari IV-24*, but you have to work hard!



Caligari IV-24

As with *Scala IV-24*, the version of *Caligari* supplied with the IV-24 is a truncated version of the grander *Caligari Broadcast*. The snag is that it won't work unless you have an accelerator board, maths co-processor and at least 3Mb of memory, which is really the absolute minimum memory required.

Because *Caligari* doesn't use ray tracing techniques it claims to render faster than programs which do. While this is certainly true I thought that the results lacked much of the depth of images produced by ray tracers like *Real 3D* or *Imagine*.

The full version of *Caligari Broadcast* appears to be versatile (according to the specifications) so I was disappointed to find that many of the features with the most potential were not enabled in this version. For instance, there is no way of editing objects other than by extruding or lathing, which restricts the range of items which can be produced. It is possible to stretch and twist primitives and glue the results to other primitives, but there's a limit to this. To make matters worse I am not aware of any way of converting objects from other modellers to *Caligari*'s unique object format. Lighting control is extremely restricted, with only one light source being allowed and though the actual movement of objects and viewpoint

CHECKOUT CALIGARI

Documentation ●●●○○
Well written, but lacking critical detail.

Quality ●●●●●
High quality rendering, from what I could see.

Features ●●●○○
Too many disabled features to be of great use.

Speed ●●●●○
Fast, but then it's not a ray tracer.

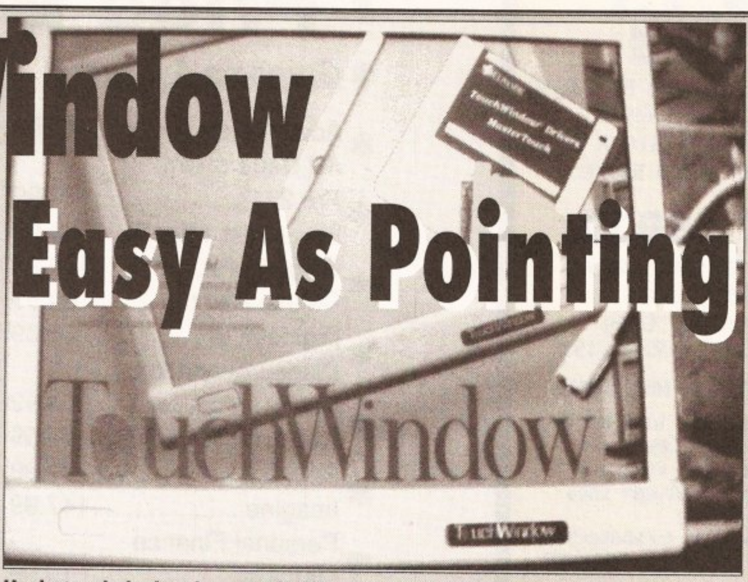
Overall rating ●●●○○

Too many restrictions for serious use.



TouchWindow As Easy As Pointing

There are only a few ways of interacting with your Amiga. You can use a mouse, get involved in code, use a lightpen, but will the latest craze be the humble finger?



Having a shaky hand can make life awkward when it comes to drawing. TouchWindow could make that a thing of the past. TouchWindow's touch-sensitive screen emulates the actions of a mouse

WHAT YOU GET

This is what arrives in the box:
The TouchWindow screen unit – a light beige coloured rectangular frame enclosing a clear plastic membrane window – which fits over the front of a 'standard' Commodore 1084, Phillips 8833 or similar size monitor. Overall size – 10.5 by 12 inches. Power supply, stylus, driver software, basic instructions, connectors, Velcro and other mounting devices supplied.

INSTALLATION

TouchWindow connects easily to the Amiga's serial port and the 9V DC power supply. The TouchWindow hardware is fixed to the front of the monitor with Velcro strips, so that it can be easily removed. The only drawback I found was that I was unable to adjust the controls of my monitor without removing the TouchWindow, as its frame was obstructing the control panel access.

CALIBRATION

Using the calibration set-up from the TouchWindow driver software, it is possible to indicate exactly where the corners of the screen area are by pressing in the top right and bottom left corners of the screen when prompted. That's all that needs doing for the TouchWindow coordinates to accurately coincide with the picture on the monitor. You can install the driver on your boot disk or hard disk and run it from the startup-sequence, the CLI or its icon. There's no need to calibrate every time you start up TouchWindow – the driver saves the last settings.

TOUCHWINDOW'S TRUE POTENTIAL

Some of the areas where TouchWindow could be useful would be for young children, people with limited hand action which makes typing or mouse use difficult, in situations requiring only limited response from the user (eg interactive information), copying artwork (by laying TouchWindow over the required picture and tracing from it) and instances where small amounts of repetitive data need to be entered quickly and simply.

TouchWindow can be used away from the monitor by removing it and laying it on a desk top, or on your knee, where it can be used for tracing pictures, overlaying on different data templates or simply as an easier way of drawing with a program such as *Deluxe Paint*. However, think carefully if you plan on using TouchWindow for drawing as it isn't very easy to draw accurately as the reading speed of the unit is rather slow for this kind use.

HOW IT WORKS

The transparent screen is touch-sensitive and intelligently emulates the action of the mouse (though it does not supplant it if connected). The window is made of two thin sheets of plastic with electrically conductive coatings. One sheet is for the X axis, the other for the Y, and by pressing them lightly together with a finger (preferably your own!) or soft stylus an electrical contact is made, the co-ordinates of the touch are registered and a response from the software in use is elicited.

TouchWindow works with almost any software that runs on the Amiga. It worked with all the programs I tested it with, although it soon became apparent that some applications are more suitable than others. Although you might think that if you use your finger for drawing you will get a big fat line this is not, in fact, the case since the TouchWindow averages the point of contact to the centre of the position touched and so it is possible to draw fine lines with *Deluxe Paint*, *Digipaint* etc. And if you are worried about putting your finger against an electrically charged surface be assured that no electricity will actually reach the user and, even if something were to go wrong, the current is so low that you will be perfectly safe.

According to the manual the working life of the TouchWindow panels is over 1 billion touches spread randomly over the surface, giving a useful lifespan of over 2 million hours in use (or 228 years!).

Perhaps a working TouchWindow will be regarded as a valuable item on the Antiques Roadshow of 2220!

SHOPPING LIST

TouchWindow .... £235+VAT
by Edmark Corporation

Distributed in UK by:
HB Marketing Ltd
Unit 3, Poyle 14,
Newlands Drive
Slough SL3 0DX
☎ 0753 686000

CHECKOUT TouchWindow

Documentation ●●●○○
Scant but sufficient.

Ease of Use ●●●●●
Very easy.

Accuracy ●●●○○
For drawing you need to take some care, but forselecting icons etc it works really well.

Quality ●●●●○
Appears to be good quality.

Price Value ●●●●○
Nothing to compete, as far as I know.

Overall rating ●●●●○

If you need this kind of tool then you have the choice between TouchWindow or a full-blown touch sensitive monitor.

in the world is extremely easy to achieve, there seems to be no accurate way of defining the placement in numerical terms, except by using a grid, so it's always a bit hit and miss whether an object really has been rotated at 45 degrees to the X axis, for example.

There are other good features which are also restricted. Texture mapping can help to make an object look real, but *Caligari* limits this option to those objects which have been lathed to at least 360 degrees or are flat polygons, meaning that none of the supplied primitive objects (or their glued offspring) can be textured. Furthermore, although it is supposedly possible to make new textures I had no luck in this at all, as there are no instructions in the manual. I could go on, but I'd better tell you about some of the positive aspects, hadn't I?

Well, at a pinch, there's Gouraud shading, which provides fast and smooth shading for non-shiny surfaces and there's easy setting for transparency, colour and attributes of objects. The range of primitive objects is comprehensive and the Environmental mapping, a quick way of simulating the reflection of an outside world on any selected object, is useful. In fact there are quite a lot of nice touches, though most are lacking flexibility because of restrictions or poor documentation.

I found *Caligari* difficult to install on to my hard disk and too limiting in use, with the major omissions outlined above and the lack of animation tools. Poor user feedback, too many diverse menus and the lack of multitasking left me wishing for a rather better alternative.

Scala IV-24

Scala IV-24 is not the eight disk, 1.1 version with all the fonts and backgrounds. In fact, there's only one disk, so it is more akin to the Amiga 500 version, though what you get will give you more than a taster – the program is essentially complete, with 40 page effects, 34 line effects and 5 Scala fonts included.

Whilst the control methods, interactive hot spot definition and background image loading are all absent the majority of the other controls and functions remain, making this a useful, if restricted, part of the bundle. Though I should warn you that the output from *Scala IV-24* is not actually 24-bit – it still looks like the hi-res, interlace, med-res or lo-res IFF image that it really is, being keyed over incoming video. And it's worth noting that the normal versions of the program will work perfectly well with the IV-24 board, so if you already own Scala you may consider the inclusion of this IV-24 version to be a waste of money.

HARDWARE SOFTWARE

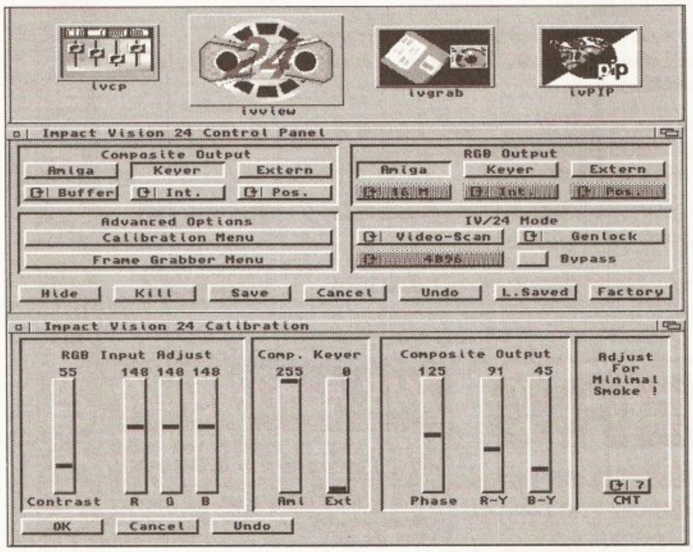
In addition IV-24 has several command and utility programs related to image display, calibration, housekeeping and setup.

IVView is a small program driven from either a CLI window or ARexx port for displaying 8-bit grey scale, HAM and IFF24 pictures. It can be used for single shot or slide show type viewing, with various parameters being supplied by the user for display time, overscan settings and so on. I found the continual need to type into the requester an absolute pain and quickly found that I could use *Directory Opus* (a fine utility program from INOVAtronics) to run *IVView*. Surely a standard mouse requester could be used here, rather than having to use the keyboard?

IVPIP is a program for setting the PIP (Picture-In-Picture) configuration, though try as I might I could not get this to work from the CLI under WB1.3, ending up without the Intuition window and gadgets As soon as I switched to WB2.0 life became easier and I found that I had full control over the PIP functions and was able to move and resize the PIP window at will. Although the manual mentions that the contents of the window can be scaled, it seems that this only applies to an Amiga screen in PIP over external video and not vice versa. So the PIP effect of external video over an Amiga screen is simply a rectangular 'window' which can be resized up to about half of normal screen size and moved around, allowing the current video image to be seen in the PIP window.

Although the manual mentions clicking on a button on the PIP window to reverse the PIP order (from video over Amiga to Amiga over video) I couldn't get this to work either, except by reversing the key settings in the IVCP calibration menu. In fact, the correct setting of PIP seems to require more visits to IVCP than necessary, especially as the configuration can supposedly be saved, but never seems to be.

There is no doubt that PIP is an interesting idea, but surely this feature is of only limited appeal? I mean, why would you want to watch *part* of a TV picture on your Amiga screen? It would make more sense if PIP was possible to compress the image down to, say, a quarter screen size. Still, as chip prices for such applications are falling rapidly we should soon see dedicated devices for such purposes at more affordable prices. Alternatively, some perceptive programmer may develop a serious use for this function. Until then, it will sadly remain a good selling point with little immediate value.



As you can see from the above, the control panel of Impact Vision is complete with requesters for calibration and frame grabber

IVCP (Impact Video Control Panel) is the main control for the calibration of the IV-24. It is used to set the number of colours displayed by the board (4096 or 16M), setting the composite and RGB outputs from a choice of Amiga (Amiga only), Key (graphics keyed over video) or External (incoming video only) and Genlock or Master mode. There are also two more sub-menus – a Calibration menu for setting overall colour, contrast, brightness, key level and phase adjustments and a Digitising menu for adjusting the parameters for frame grabbing from a video source.

IVGrab is used for controlling such factors as the size and destination of an image grabbed from an incoming RGB video signal, though I wasn't able to try it out as no RGB splitter was available at the time of this review.

All the above programs support ARexx commands and can be run from either Shell or Workbench.

IVCMD

This is a Shell-driven program which enables commands to be passed to the IV-24. For instance, the scan frequency, number of colours, grab commands, PIP, genlock settings and buffering control can be addressed from the CLI. This was useful, as I found that although IVCP allows the genlock/ master mode to be toggled, the change would not be activated until a "IVCMD GO_LOCAL_NEXTBOOT" was issued from IVCMD and the Amiga rebooted to cause the IV-24 to lock to the sync of the external video signal.

IVREAD

This last item provides control over the IV-24's 33 user addressable registers (which are used for setting modes and functions). Again, this is a CLI-only program and it appears to duplicate most of the commands which can be issued by IVCMD.

HOW IV-24 SHAPES UP

I've got mixed feelings about the IV-24. While I like the idea of bundling software with the board I felt let down by the quality and finish of many of the programs. If I'd paid for this I'd have been miffed about the quality of *Caligari*, especially after reading GVP's Stateside ads. Should IV-24 be available without the extra software, at a reduced price. Or at least with a choice! *IVView* would also benefit from a spring clean – a proper requester system wouldn't go amiss. It all seems rushed – the hardware is generally fine but the software is flawed.

REQUIREMENTS

You'll need an Amiga 1500, 2000 or 3000 with at least 5Mb memory, a 68020/30 board with 68881/2 co-processor and a hard drive. Optional equipment includes an RGB video source and equipment such as a video recorder with single frame recording capability, an animation controller (as no transport controller is included with *Caligari*), an external composite keyer and a Time Base Corrector or sync pulse generator. You might also consider an external video monitor for displaying 24-bit images and the full-colour *Macro Paint* screen if you can't feed your monitor with composite or Y/C video.

The Amiga setup I used to test the IV-24 was an Amiga 2000 with a 40Mb hard disk, GVP 3001 50 MHz 68030 card and 9Mb memory. Thanks to Silica for the loan of the 3001 card (around £1800). For the purposes of testing I used both the standard 1.3 Workbench and a Zkick'ed version of Workbench 2.0 (note to Commodore – where is the Enhanced Chip Set for us existing 1500 and 2000 owners?).

To get the best out of the IV-24 card you need some serious hardware. But if you are *really* serious about computer and video graphics then there's really no way to avoid this in the long run. High level graphics cost lots of money, so the relative cost of this set up is really quite reasonable, compared to some of the high-end stuff that's out there. But for the majority of us it's still a heck of a lot of dosh! AS

CHECKOUT
SCALA

Documentation ●●●●○
Good – all you need to know.

Quality ●●●○○
Looks jaggy in comparison to the 24-bit graphics of the IV-24.

Features ●●●○○
Stripped-down version of great program.

Speed ●●●●○
Dependent upon your Amiga kit, but no slower than the original.

Overall rating ●●●●○
A hacked-up version of a good program.

SCALA'S TECH SPECS

- 24-bit RGB frame buffer or dual 12-bit buffers for animation
- Maximum resolution 768 x 580 PAL overscan
- 31 kHz output for flicker free display with VGA or multisync monitors
- 15 kHz output for video applications
- Real time (1/25 second) 24-bit frame grabbing (needs optional RGB splitter)
- Picture in Picture (PIP) application
- PAL composite or Y/C outputs
- Digital RGB genlock for 24-bit overlay on RGB video input
- Analogue genlock for 24-bit overlay on composite video input
- No time base correction required for external video sources

All in a Dither

Jeff Walker goes dotty about a program which enhances the printed output of graphics

For the past couple of months I've been putting a printer graphics output enhancement package called *TURBOprint Professional* through its paces. It's not a new program, it's been popular in Germany for some years, but now it has been translated into English.

The problem with Workbench Preferences is that it gives you a choice of only three dither patterns – Ordered, Halftone and Floyd-Steinberg. At resolutions of about 180 dots per inch (dpi) and lower these dither patterns are acceptable, but at higher resolutions such as 300 and 360 dpi the patterns representing levels of grey are formed by dots so small and close together that it is difficult for the naked eye to see the differences between them.

This results in dark and muddy screen dumps, particularly if the original image contains a lot of slight variations of the same colour – things like 16 colour greyscale scanned images and 4,096 colour digitised HAM images.

For better looking 300 and 360 dpi output, what's needed is a way to make the dots larger and further apart. To use a very old and probably over-used example, like the patterns newspapers use to publish black-and-white photographs.

SETTING THE SCENE

TURBOprint Professional is a replacement for the Graphics section of the Printer part of Preferences. It has four sections: Printer Settings, Preferences, Additional Functions, and Colour Conversion.

The Printer Settings page is where you choose your printer driver and dither patterns. *TURBOprint Professional* uses its own type of printer drivers and comes with a goodly selection including drivers for most types of Epson impact dot-matrix printers, the popular Star LC-10 and LC-24, plus Hewlett-Packard DeskJet and LaserJet II (with no 8in by 10in restriction for graphics dumps like the Workbench equivalents have). The DeskJet driver doesn't work with the new colour HP-500C, but if this printer becomes popular with Amiga owners I would guess that the German developers, IrseeSoft, will develop and distribute one to interested parties.

At the moment there is no driver for the popular Canon BJ-10e bubble jet, but there is one for the BJ-130 which works with my BJ-130. This should mean that it will work with the BJ-10e if switched into BJ-130 mode (dip switch 10 I believe), although I haven't been able to test this theory.

Also worth mentioning are the drivers for four laser printers for which there are no Workbench drivers – the Epson GQ3500, the Canon LBP-4 and LBP-8II, and the Star LaserPrinter 8.

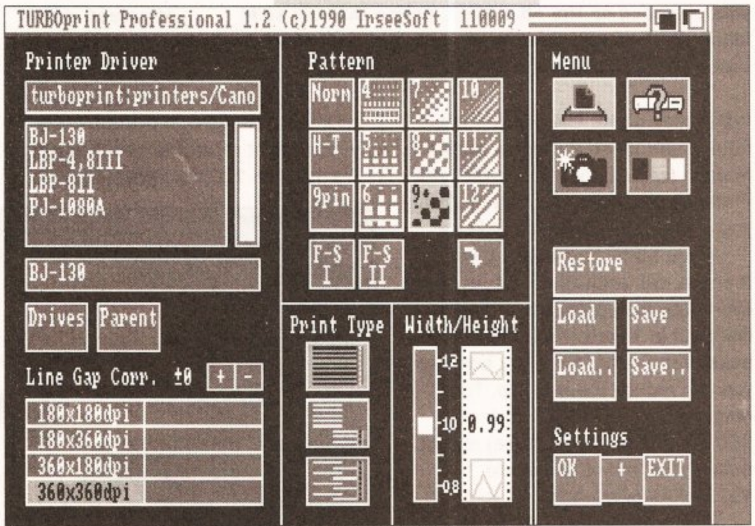
The manual says that as well as working with its own drivers, *TURBOprint Professional* will accept Workbench 1.2 printer drivers, but not those distributed with Workbench 1.3 or higher. Having formatted my Workbench 1.2 disks some time ago I'll have to take IrseeSoft's word for this; it's probably a feature from a previous version that has been left in for the sake of compatibility.

There are 14 dither patterns on offer. Four of them are the standard Workbench dithers plus an extra Floyd-Steinberg dither that disperses the dots better for high resolutions. However the ones you'll be using most will be those labelled 4-12.

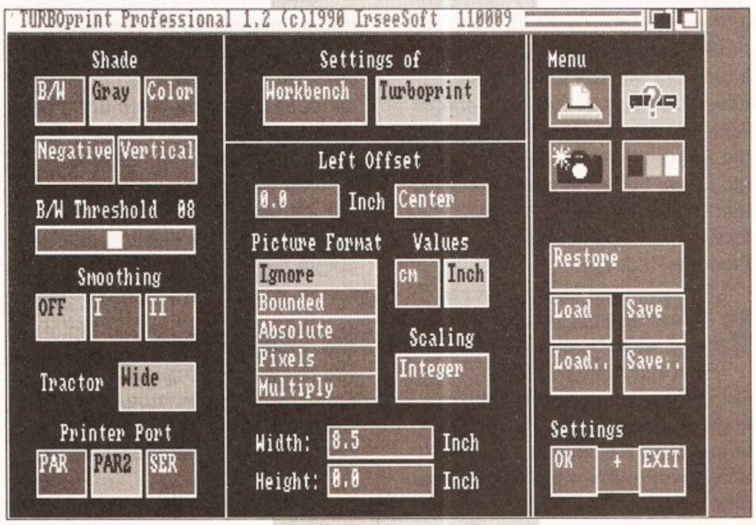
There are three types of pattern – horizontal dots, diagonal dots, and diagonal lines – in three sizes of dots. A bit of experimentation is needed to find out which pattern works best with your printer, but the smaller dots produce better images at low resolutions, the larger dots at high resolutions. Using setting 9 (large diagonal dots) the output I got from a LaserJet II was indistinguishable from 60 lines per inch (lpi) PostScript output with a 45 degree dot angle (*Professional Page* default).

Inkjet printers benefit from the larger dot patterns because the dots are bigger and the white space between the dots is bigger too, so the inevitable ink spread on uncoated paper becomes less of a problem.

The other big problem with tractor or friction fed printers is 'banding' – the horizontal striped effect resulting either from strips of the image overlapping slightly (black banding) or



Printer drivers for almost every popular make of printer are supplied with *TURBOprint Professional*



The Preferences page can largely be left on its default settings, most of which it'll initially take from your current Workbench Preferences settings

Printer drivers supplied with TURBOprint Professional

Brother – 9-pin, 24-pin

Canon – BJ-130, LBP-4, LBP-8II, PJ-1080A

Epson – EX/FX/LX, GQ3500, LQ/SQxx00

Facit – B3450, B3550

Hewlett-Packard – DeskJet, LaserJet II

Nec – Pinwriter Px

Oki – ML294, ML38x, ML39x, Okimate 20

Panasonic – KX-P1124, KX-P1540, KX-P4450

Seikosha – MP-1300, OP-105, SL-80AI, SL-80IP, SL-92, SP-2000

Siemens – HighPrint 4x00, PT88/89, PT90

Star – LaserPrinter 8, LC-10, LC-24, XB-24, NB-24



The difference gamma correction can make: this dump was produced on the +8 setting, notice that the solid black shade is still there in the hair, but the jump from that to the next brightest shade is massive

from strips of the image not quite fitting together so the paper shows through (white banding). *TURBOprint Professional* addresses this by giving you a Line Gap Correction feature.

If you suffer from black banding then you can attempt to get rid of the overlap by increasing the printer's line feed in 'micro steps' after each pass of the head. For white banding you can reduce the line gap. The range is from -9 to +9, which on a 360 dpi printer (for example) means from -9/360ths of an inch to +9/360ths of an inch.

This feature works on all impact dot-matrix printers supported by *TURBOprint Professional* except the Oki ML294. I tried it on a NEC 24-pin printer that had a very slight black banding problem, and with Line Gap Correction set to +1 I ended up with a very slight white banding instead. Individual impact dot-matrix printers tend to suffer from banding to differing degrees, so although I couldn't cure my banding, Line Gap Correction may very well cure yours.

I should point out that this feature didn't work on my Canon BJ-130 bubble jet with the *TURBOprint Professional* BJ-130 driver, although it did work with the Epson 9-pin driver (240 by 144 dpi), so it should work with other bubble jets (including the BJ-10e) if dumping graphics in the Epson LQ emulation mode using the 360 by 360 dpi *TURBOprint Professional* Epson LQ or NEC Pinwriter Px driver.

There are two further features in the Printer Settings section for Print Type and Width-Height Ratio.

Print Type, like Line Gap Correction, is for use only with impact dot-matrix printers. The idea is to reduce the banding effect, this time by controlling which pins of the print head are for printing.

There are three settings. The first is Normal, which uses all the pins and is the fastest mode. Half-line mode uses half the pins, Lower Pin Count uses two-thirds of the pins. Again, experimentation is needed and the results will be different for each impact dot-matrix printer.

Width-Height Ratio merely adjusts screen dumps to be squashed or elongated. For instance if your on-screen circles are coming out in the dump as slightly squashed ellipses, you need to decrease the width-height ratio. The slider ranges from 0.8 to 1.2 in 0.01 steps, with 1.0 meaning 'no adjustment'.



This dump is on the 0 setting, and produces excellent results for this particular image

I found that on my 360 dpi BJ-130 a setting of 0.99 produced perfectly circular circles.

One feature of Printer Settings I haven't mentioned yet is a button that lets you rotate the dither pattern by 90 degrees. This only has a visual effect on the output when using one of three diagonal line patterns, and results in the lines sloping down from left to right instead of right to left. Depending on what you are trying to print, this can enhance the output quality; there's no rule of thumb, it's a case of trial and error.

AS YOU LIKE IT

The Preferences page of *TURBOprint Professional* is a mixture of the Change Printer, Graphics 1 and Graphics 2 pages of Workbench 1.3 Preferences.

From here you select the shading (black-and-white, grey or colour), the threshold value for black-and-white output, plus whether you want a negative or positive and horizontal or vertical (sideways) printout.

I should mention at this point that because of the way *PageSetter II* outputs its pages in strips, rather than one huge graphic dump of the entire page, the vertical (sideways) feature of *TURBOprint* won't work with that DTP program. For the same reason, neither will it work with *Pro Page*, although V2.1 has a sideways printing feature anyway.

Paper Size selection is much simplified – either your printer is Wide Tractor, or it isn't.

Smoothing is also selected on this page. This is the feature whereby extra printer dots are added to the jagged edges of bitmapped graphics so that diagonal lines and curves appear more smooth. There are three settings: OFF, Smoothing I, and Smoothing II which is an enhanced version of the standard Workbench smoothing (I).

The only real use of smoothing is when printing text as graphics from word processors that have this feature – programs like *KindWords*, *Pen Pal*, *Wordworth* and (dare I say it?) *NotePad* – and then only at point sizes of about 18 and greater. The results of *TURBOprint*'s Smoothing II function are better than those achieved with Workbench Preferences' smoothing, but the quality is nothing to write home about. However this isn't *TURBOprint*'s fault because you can't make a silk purse out of a sow's ear.

If you are using the serial port for printing you can select it from this page, but you are more than likely using the parallel port and *TURBOprint* offers two choices here – PAR or PAR2. The former is the normal way of printing via the Amiga's parallel.device, whereas PAR2 causes *TURBOprint* to utilise its own built-in routines, which results in faster printouts and more free memory because Workbench doesn't need to load the devs:parallel.device program.

The most complicated part of the Preferences page is the Picture Format section, which is similar to the Limits section of Graphics 2 in Workbench 1.3 Preferences – the buttons that say Ignore, Bounded, Absolute and so on. Everything works in the same way except that, like a good European should, you can specify measurements in centimetres instead of inches.

The function of the buttons is explained quite well in the manual, and with trial and error you will soon come to understand the effects of selecting certain buttons and changing Width and Height values.

EXTRA FEATURES

The Additional Functions page contains features that are missing from Workbench Preferences.

The most notable feature is a Poster mode whereby screen dumps can be scaled up to enormous sizes and output on to several pieces of paper which can be stuck together to form a poster. The largest it'll go is 64 pages wide by 64 pages deep, which is big; the smallest poster is two pages in either direction.

Alas and alack, woe is mĕ... because of the way *Professional Page* sends its pages to the printer in thin strips, this Poster mode doesn't give the expected output. Oh yes, it works, only you get thin horizontal strips one under the other, making for a fiddly and time consuming job cutting them up and sticking them all together. I must stress that this is not a bug in *TURBOprint Professional*, it is a feature of the way *Professional Page* outputs its pages.



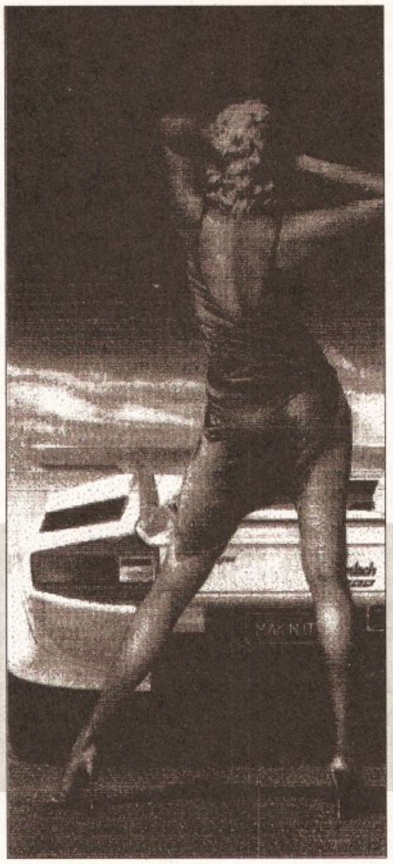
This dump is on -8 gamma correction. Notice that solid white is still there but the jump to the next darkest shade is massive

I tried creeping up on it by using the CMD command to send the output to a file and then using the Copy command to send that file to the printer, but as this file needs to be sent to the PAR: device and *TURBOprint* is

watching the PRT: device, all I got was a normal printout. Bah!

The Poster mode works excellently, however, with art programs and anything else that does a normal graphics dump, including word processors like *KindWords*, *Wordworth*, *Pen Pal*, *ProWrite*, *Excellence!* et al.

A Copies feature allows you to specify the number of copies to print, in case the software you use doesn't have this feature, and whether to send a form feed between copies or put up a requester asking you to insert a new sheet of paper – useful if you don't have an automatic single sheet feeder.



Normal output using the Halftone dither pattern of Workbench Preferences at 360dpi

A section of this page labelled Special contains two features that I some people may find useful. The first is a Mirror function that prints a mirror image of the graphic. As the manual points out, this is especially useful if you are printing on to a 'transfer' type of media whereby the image is going to be ironed on to a T-shirt or something.

This Mirror function works with *Professional Page* (whose built-in mirror function only works with PostScript printers), so you could, for example, use this to produce transparencies for overhead projectors – the ink will be on the underside when placed on the projector, allowing you to write on the film without smudging the ink. You could also use *TURBOprint*'s Mirror feature to print "emulsion side down' with *Professional Page* and Dot-matrix Output on imagesetter film.

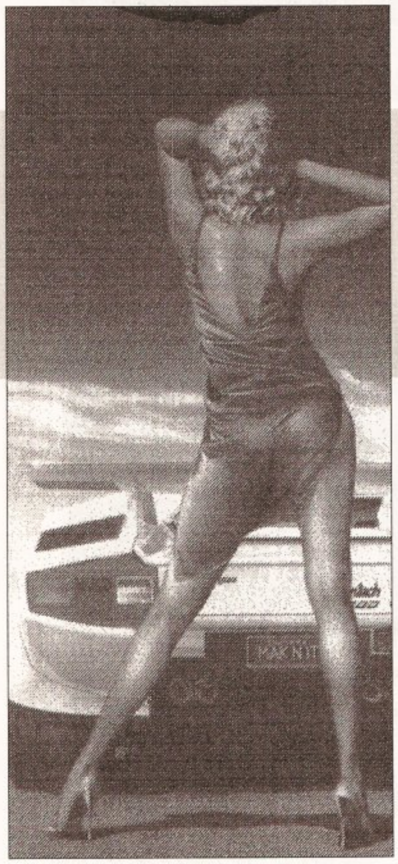
The other 'special' feature is a Top Offset value that allows you to specify how many line feeds to print between several graphics dumps on the same page.

The rest of this Additional Functions page is given over to some housekeeping features. A Hardcopy button toggles on and off and decides whether the reset-proof hardcopy function is activated or not.

When activated, the hardcopy function means that you can get a graphic dump or save the current screen – Crtl-Alt-P prints the contents of the current screen, Ctrl-Alt-O does the same thing but reverses the Workbench (1.3) colours so the dump is easier on the ribbon or ink/toner cartridge.

If you don't want to print the whole screen, one further key press, Ctrl-Alt-G, changes the mouse pointer into a set of crosshairs and lets you drag a box over the area of the screen that you want to print.

If you want to cancel a printout part of the way through it, Ctrl-Alt-C does the job – and this hot-key works with all printouts, not just those started with a Ctrl-Alt key press.



Two more key presses let you save the entire contents of the current screen, or an area specified by dragging a box around it. These get saved to the path and filename typed into a string gadget on the Additional Functions page, which you end with (say) "00", and subsequent screen saves are saved as "filename 01", "filename02" and so on.

The final section deals with memory management.

Two buttons let you select between Normal memory and Fastmem Last; selecting the latter will allow some of those old, badly written programs to work – the kind that don't like memory expansions. Two more buttons let you choose whether the *TURBOprint* reset-proof code is located at the top or the bottom of the memory map – the top is the normal place, but if it clashes with something else, such as a recoverable RAM drive, it can be moved to the bottom of memory, from where it may not be reset-proof and won't get in the way of whatever else is using the reset vectors.

FUN WITH COLOURS

The final page of *TURBOprint* deals with colour conversion and gamma correction – two complex features that require much mucking about with to get right.

Mind you, this isn't *TURBOprint*'s fault, it's the nature of those functions, but IrseeSoft has done its best to make the features as painless as possible to use.

The first thing to notice is the Colour Separations function; this divides a on-screen colour image into its primary colours of Yellow, Magenta, Cyan and Black – known as YMCK, or sometimes as CMYK; K is used for black so as not to confuse it with another colour that begins with the letter B, like Blue or Brown. These separations – usually all four – can then be used by a printing firm to make plates from which full colour pages can be produced.

Printed using the largest diagonal lines pattern of *TURBO-print Professional* with the gamma value adjusted to +3. Notice that the banding evident in the diagonal dots version has almost completely disappeared

Another use is to filter out the primary colours to produce a home-made colour printout on a black-and-white printer by putting the paper through four times and using various coloured ribbons or ink cartridges.

The process isn't automatic, you have to use *TURBOprint Professional* to select each colour one at a time and do a graphic dump for each separation, but this isn't much of a bind as *TURBOprint Professional* is memory resident so you don't have to run it from disk each time, press Ctrl-Alt-T to bring up the *TURBOprint* window on the Workbench.

I tested the feature with *Deluxe Paint II* and *IV* and it works brilliantly; it also worked with those 'graphics' word processors like KindWords, Wordworth, Pen Pal et al....

One of the more serious criticisms of *Professional Page* is that it can't send colour separations to a dot-matrix printer. And no matter how I try, I simply cannot get *TURBOprint*'s colour separations to work with it. It's baffling – everything else I tried it with worked first time, so I suppose it has to have something to do with the way *Professional Page* outputs its pages. What a bummer! I've had to revert to

Hand scanner latest!

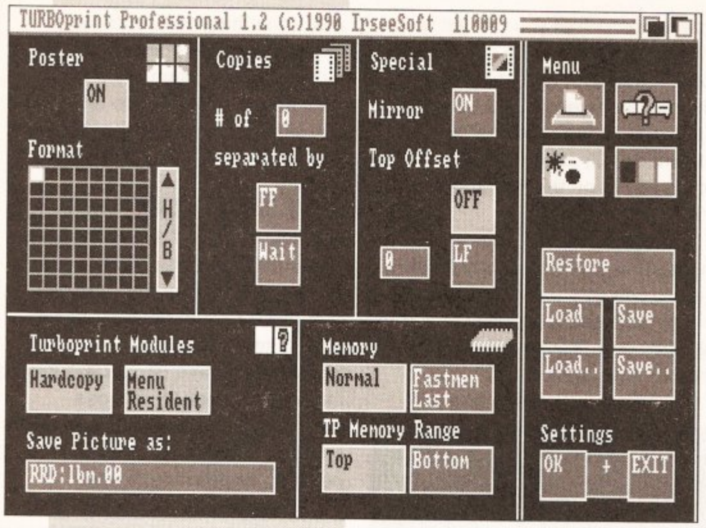
In the face of stiff competition Gasteiner is to cease marketing the 64 greyscale Golden Image hand scanner, replacing it with the higher specification Alfascan Plus hand scanner.

Although the scanning head is the usual 64 grey levels Marstek M-105 Plus – the same one used by the Power Scanner – Gasteiner says that by some clever software wizardry the Alfascan Plus is able to produce 256 greyscale images. The software in question is version 2.5 of *Touch-Up*.

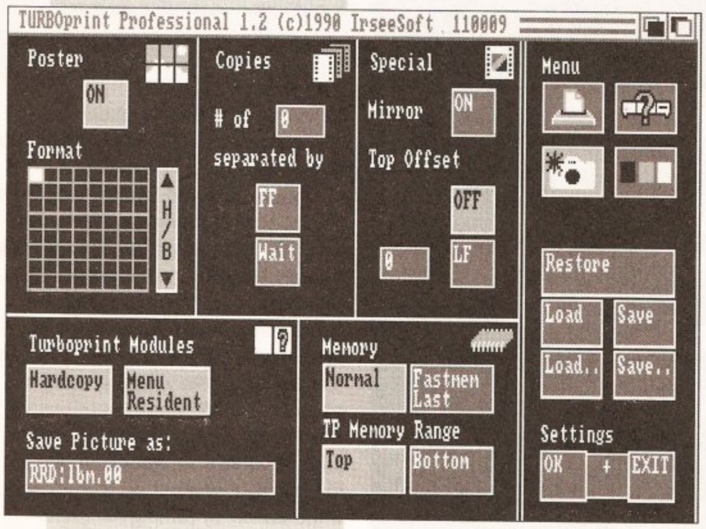
Along with *Touch-Up* the scanner will be bundled with a 'scanning ruler' and Migraph's Merge-It software that allows you to effortlessly splice together two halves of a wide scan. The package will retail at £179.

While on the subject, 16/32 PD (0634 710788) tells me that it is now selling the Golden Image scanner interface and *Touch-Up 2.0* software separately. This means that owners of rival scanners who use the Marstek M-105 scanning head (like DaataScan Professional) will be able to enjoy the pleasures of the *Touch-Up* software without having to buy a new package.

Touch-Up will load any IFF ILBM image produced by other scanning software, so you don't need the Golden Image interface to use the image manipulation features of *Touch-Up*; you only need to buy the interface if you intend to scan with *Touch-Up*. Note that this is the 64 greys version 2.0 of *Touch-Up*, not the 256 greys version 2.5 bundled with the Alfascan Plus.



The additional page provides some features that Workbench Preferences is lacking



Ah, the deeply wonderful world of colour and gamma correction. This, along with the new dither patterns on the Printer Settings page, is what makes *TURBOprint Professional* special

the long-winded and memory hungry technique of sending PostScript output to disk files and then using a PostScript interpreter to output the separations to my bubble jet. It's either that or (whinge, moan, humble pie...) use *PageStream*.

Colour correction is a real art. I mean, printers spend a lifetime learning about it and even then they still get it wrong sometimes, which is how they keep on learning.

The idea is that you want your output to look exactly as it does on-screen – exactly the same colours I mean. For instance if an area of red in the printed output is darker than the same area of red on-screen, you need to 'correct' the printed red colour.

Workbench Preferences has a very simple colour correction button, *TURBOprint Professional* gives you complete control. As a consequence it becomes a highly complex process and, fair play to IrseeSoft, the manual goes into great detail, even giving you a worked example with a test picture that comes on the disk.

To make things simpler, four built-in settings are provided. Dot Matrix I works well with impact printers that have four-colour ribbons; Dot Matrix II is the same but with 'screen colour error correction' (the manual explains what this is); Inkjet is for inkjet printers, like the HP PaintJet for example; and Thermo is for thermal transfer printers, the Okimate 20 for instance.

Three additional settings are provided for you to fiddle with to your heart's content. I wish you luck; if you are into colour you'll have years of fun, provided your pocket can stand the cost of all those test printouts that is.

RAYS OF LIGHT

I've saved the best til last – the sliders that let you adjust the gamma correction and brightness levels of the printed output.

Now don't rush off and put on your lead boots, gamma correction has nothing to do with radioactivity, it gets its name from the Greek letter 'gamma' used in the mathematical formula for this process. I think. I mean, I'm no mathematician so don't quote me on that.

It's actually quite simple to explain if you forget colours for the moment and think, instead, of levels of brightness. We'll keep to 16 levels of brightness to simplify matters, ranging from 0 (black) to 15 (white). Thinking of the 16 shades of grey from black to white might make it easier to picture, with the intermediate greys numbered 1 to 14.

Imagine that your printer produces 16 dither patterns to approximate these shades of grey (which is what it does), and imagine that colour 0 on the screen produces dither pattern 0 on the printer, colour 1 on the screen produces dither pattern 1 on the printer, and so on up to colour and dither pattern 15.

If you drew a graph of this it would be linear. In other words, a straight line would connect the points on the graph through 0,0 1,1 2,2 up to 15,15. If you moved along the Screen axis to (say) 9 and then up to the line of the graph and across to the Printer axis, the Printer value would be 9 also. One step along the Screen axis is one step along the Printer axis. Yes?

Now imagine that you've got a very dark 16 greyscale digitised or scanned image. You can't brighten every shade of grey by one or two points because this would result in shades 13 and 14 becoming 15, which is white, and parts of the image would disappear. The graph would remain linear, all we have done is make the slope steeper.

This is where gamma correction comes in. What it does is grab the middle of the line on the graph and drag it downwards or upwards, producing a concave or convex curve. The end points remain fixed on 0,0 and 15,15 but the points in between change values depending on how far you pull the line. The effect is that the parts of the image that were pure black and pure white remain the same, but if a positive gamma value is given (the line is pulled upwards) the values between grey levels are in larger steps, with the effect that fewer dark shades are produced, and more brighter shades. Supplying a positive gamma value (pulling the line down) has the opposite effect.

This is actually a very sophisticated feature. The only other program I know of that has a gamma correction feature is *The Art Department*, although that program permanently changes the screen image, which may not always be desirable because the image will dump out differently at different resolutions and on different printers.

The *Art Department* also lets you adjust contrast and brightness, which is in effect what we were doing earlier when we upped the value of each colour by a couple of points. *TURBOprint Professional* lets you do this, with four sliders that match screen brightness levels from 0 to 32 with printer brightness levels from 0 to 32. Changing the brightness and contrast levels is of limited use because bits of the image will tend to disappear to solid white or solid black, but in certain situations it can be used to sharpen a fuzzy image or soften a harsh one.

Experimentation is required to discover the best settings for your printer and the image you are printing, but the manual provides good pointers and suggests values that work well with certain printers and output resolutions.

These settings work with colour printers which will turn your years of fun with colour correction into decades of delight fiddling with colour and gamma correction and brightness and contrast levels.

IN CONCLUSION

I am impressed with *TURBOprint Professional*. From a very subjective point of view it has visibly enhanced the quality of *my* magazine (*Just Amiga Monthly*) to the point where one or two interested parties have suggested I am fibbing about using a BJ-130 bubble jet printer for the output; they reckon I've been using a PostScript laser printer. So, in effect, a £50 investment has bought me £1,500 more expensive printer.

Mind you, it's no paragon of virtue. *TURBOprint Professional* has frozen on me – after having called it up several times and made changes between printouts.

Despite this and the fact that its colour separation and poster functions won't work with *ProPage*, *TURBOprint Professional* is now a permanent fixture on my machine.

If you are in the habit of using bitmaps on your pages, whether they be in colour or greyscale, and whether you have a 9-pin dot-matrix or laser printer, black-and-white or colour, I think you'll find it's £50 well spent. AS

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Access

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Toe the party-line

This month Phil Harris begins our look at the social side of comms with a closer look at electronic mail, conferencing and Compulink Information eXchange

Welcome back to the comms pages. This month I'll be looking at how comms can breath new life into your social scene, as well as homing in on electronic mail, conferencing systems and CIX.

ELECTRONIC MAIL

Electronic mail, or E-Mail, is very similar to the 'normal' postage service in that messages are written by one person and 'posted' to another. Posting the message involves uploading it to a bulletin board system of some sort, where it is placed in the 'mailbox' of the user to whom you are sending the mail. Next time that user logs on to the system they are informed that a message is waiting, then they can collect it and read it.

Electronic mail has several advantages, in particular speed. Provided the recipient of the message calls the bulletin board concerned regularly, an E-Mail message can be received within a few minutes; even transatlantic messages only take a few hours.

Files can also be sent via electronic mail, although they sometimes need to be encoded in a text format before they are sent. This means that the recipient needs the same software to decode the message at the other end. Standards do exist though and this doesn't normally prove to be too much of a problem.

Pictures and diagrams are more difficult to send via electronic mail, but if they are in machine readable form, an IFF image for instance, they can be encoded and sent as normal files. Recently, for example, a number of digitised images of rock bands have been circulated using encoded mail messages, not particularly useful, but the pictures could quite easily have been circuit diagrams or architects' drawings.

E-Mail is ideal for rapid transfer of information, be it the latest version of a piece of software from America, or a comms article for an Amiga magazine, E-Mail is often faster, cheaper and more reliable than snail mail.

CONFERENCING SYSTEMS

Conferencing systems are an extension of bulletin boards and electronic mail where the emphasis is placed on messages and discussion rather than files, although files do often play a large part.

Conferencing systems are usually very large with plenty of storage space for the vast amount of messages which are posted every day and with several telephone lines into the system to allow more than one user to be on the board at one time.

Conferencing systems are divided into sections (conferences) devoted to one particular subject. Subjects vary immensely, anything from Amigas to role-playing games to beards!

Each conference operates in a similar manner to more traditional types of conference. A group of people get together and discuss the subject in question by posting messages on the board. The difference being that the discussion takes place over a period of time and participants are situated all over the country or even the world.

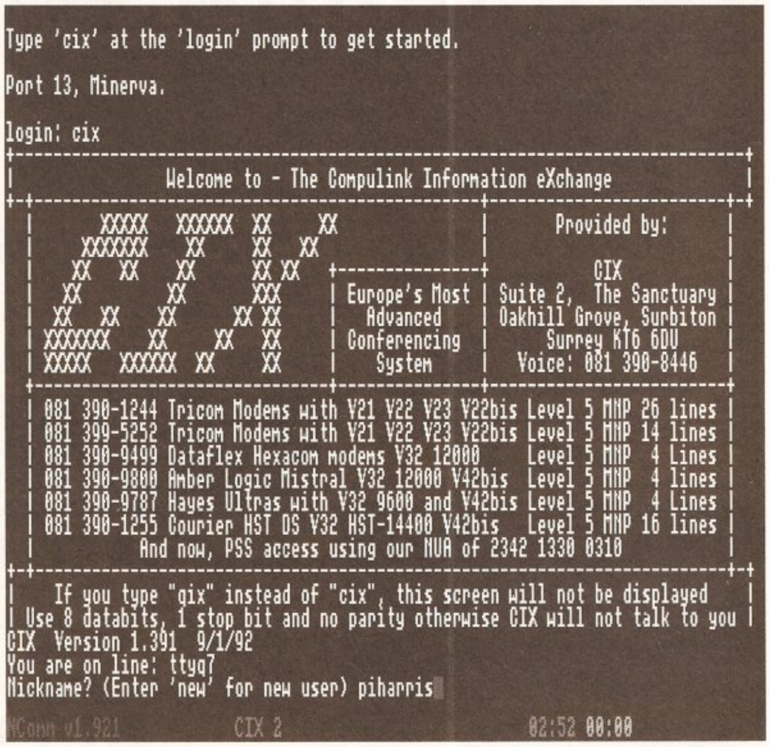
This is the greatest advantage of computer-based conferencing. Not everyone need be in the same place at the same time. One person will start a conversation, or 'thread'; as time progresses and other people visit the board, comments to the message will appear and the discussion, or argument, progresses.

Sometimes a thread will progress rapidly. If a couple of people are on-line at the same time an almost real time conversation can result, with one person replying to the other's comments immediately after they appear on the board. The conversation can progress more slowly, particularly in the quieter, minority conferences where the participants log on less frequently.

Beginners can use appropriate conferences to ask questions when they are stuck; they will usually be greeted with a host of replies from more experienced members of the conference. In particular, advice is available on which program is suitable for a particular task or how to use a certain program.

But experts are well catered for too. Computer professionals often log on during the daytime using

continued on page 89



Are you lonesome tonight? Never again, with CIX. All those hours of friendly chats and debates are just a few key-presses away from the title screen...

CIX TERMS

CIX has its own set of terminology that pops up now and again, some of which can be very confusing.

Binmail – BINary MAIL. The system used to send programs and archives to other CIX users.

Blink – The process of logging on to CIX, archiving unread messages and then leaving, as is done with an off-line reader.

CIXen – A CIX user.

Conference – A subject area, a collection of topics.

Flame – An abusive reply to a comment.

Lurking – The habit of hanging around in a conference, without saying anything.

Shouting – Typing something in capital letters is used to SHOUT a word, emphasising it.

Thread – A discussion within a conference.

Topic – One smaller area within a conference, devoted to an area of the subject under discussion.

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company accounts and offer advice on the more difficult questions, even going as far as writing some example code or uploading an appropriate program to help out.

Companies producing software will sometimes provide on-line support for their products including upgrades and bug fixes for registered users and news and information for the world in general. The level of support varies depending on the company. Some will use a 'closed' conference where access is usually restricted to registered users, while others leave the conference 'open' and invite anyone to take part.

Larger companies also take advantage of conferencing systems by having their own confidential conferences which are not available generally. These areas can be used by a company's employees and associates to discuss ideas and distribute information quickly.

In addition to the messaging aspects of a conferencing, files are also covered. Most conferences will have a place where relevant files can be uploaded for others, and often there will be a central area where all files on the system are available.

PICK UP SOME PD

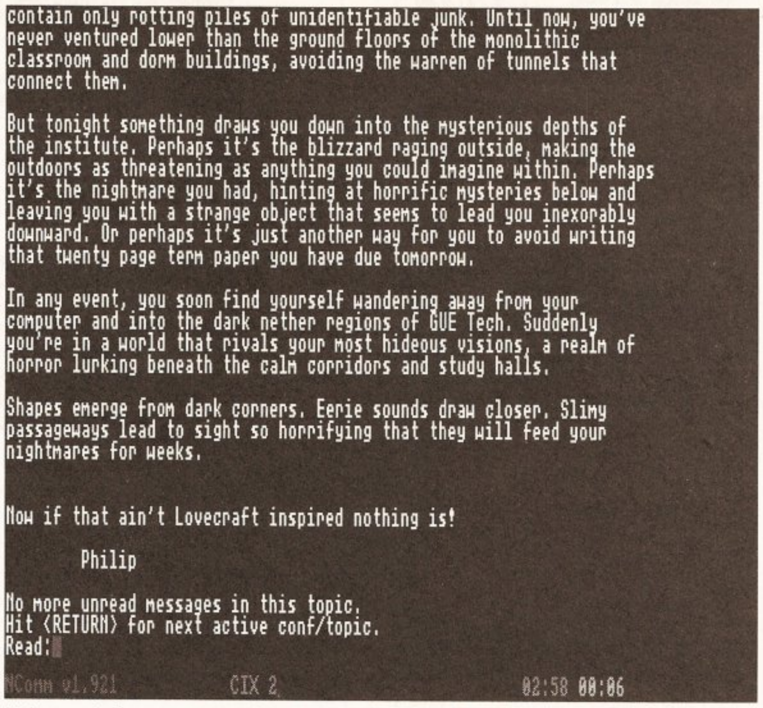
Programs available vary, all the usual public domain software can be found, as on any other bulletin board, but source code for programs can be found in abundance. If you've got a task you want doing, the chances are someone will have written the code to do it and will be willing to upload it or, at least, give some hints on how to go about it. Shareware authors also haunt conferencing systems, uploading their latest software, and providing on-line support for people who register the product.

Some systems also provide other services (usually on a charge per use basis) including on-line shopping, details of current share prices, weather forecasts, sports results, TV guides and theatre information.

Conferencing systems are usually run on a profit-making basis, because of the high costs involved in buying and maintaining the computer equipment required to run a complex conferencing system. But costs are not too high and sensible usage coupled with the use of off-line readers keeps the costs down.

Sometimes a conferencing system will acquire an idiot user, who delights in annoying other users of the system. Such people are usually ignored, and once they come to the attention of the administration running the conferencing system they are removed. Luckily these occurrences are rare and a friendly atmosphere pervades.

Conferencing systems allow people from all walks of life to mix and chat, everyone is equal and there are few prejudices to get in the way of friendly discussion. Arguments do occur and people fall out, but disputes are generally short lived. Conferencing systems are a great place to meet people.



This mysterious message is what you make of it. When you delve into the different conference topics available, you never know what you might come across when you're browsing

JARGON BUSTING • JARGON BUSTING

Archive – A file containing a program and any documentation, source code etc associated with it, compressed into one file to allow easy uploading and downloading. Archiving programs available include ARC, LHARC and ZIP.

Baud Bits per Second – A measurement of the speed of a modem. Dividing the Baud rate by ten gives a rouch estimate as to the speed in characters per second that the modem operates at.

BBS – A Bulletin Board System. A BBS is simply an electronic noticeboard. Callers to the system leave messages for other users to see or they can download and upload files for other people. When calling a BBS it is important to remember that you are a visitor on another person's system and behave appropriately.

CIX – Compulink Information Exchange. A commercial conferencing system with message areas (conferences) for just about every subject imaginable. The favourite haunt for programmers and journalists.

Download – To transfer a file from a BBS to your own computer. Boards will usually limit the amount of time you have to spend downloading files, although many boards reward uploads with longer download times. Even if this is not the case, you should try and upload a new file every now and again, to keep the board fresh and show your appreciation to the sysop.

E-Mail – Electronic Mail. The process of transferring messages and sometimes files between modem owners.

Mailbox – The place where a person's Electronic Mail is stored.

Modem – A MODulator DEModulator. A modem is used to translate digital signals from your computer to and from audible signals that can be transmitted down a telephone line.

Sysop – The SYStem Operator, the person who runs the BBS you are calling, usually voluntarily in his or her spare time.

Terminal – A software package which allows you to communicate with a modem; features vary but all include a transfer protocol of some sort.

Transfer Protocol – A method of ensuring error-free transmission of files. A transfer protocol is a system for checking and acknowledging sections or 'packets' of a file, each packet is re-sent until it arrives correctly, making sure each program transmitted arrives in good condition. There are many protocols available. XModem and ZModem being the most common.

Upload – To transfer a file from your own computer to a BBS.

KICKING INTO CIX

Britain's biggest conferencing system is the Compulink Information eXchange based in Surbiton, Surrey. CIX receives around 4,000 calls a day although the actual number of callers is somewhere in the region of 1,000-1,500, each one calling two or three times a day. There are over 1,000 conferences covering every imaginable subject, an on-line game called *Federation II* and a link to the Unix network of computers, Usenet.

The majority of bulletin boards work on a menu system, the board is navigated using a selection of key presses chosen from on-screen menus. While this is easy to use it is quite slow, particularly if the menus are large.

CIX uses command line based commands to move around, enter messages and download files. While this takes some time to get used to and learn the commands, it offers much more versatility than a normal menu based system.

Users move between conferences by typing in commands much like those in the AmigaDOS Shell. Eg, typing JOIN LEMMINGS would join the conference for *Lemmings* addicts. Once you've joined a conference you are in READ mode. From here messages can be read or transferred to a special area called the SCRATCHPAD.

The SCRATCHPAD is a temporary file which can be used to store messages and text files for later use. The scratchpad is one of CIX's most powerful features. Its main use is for reading all the unread messages on the board and downloading them in one big chunk, usually archived, to be read off-line using an off-line reader such as Query (see below).

The scratchpad can also be used to create a script file, a series of CIX commands which can be executed, just like an AmigaDOS script. This allows rapid manoeuvring of the board and is used by off-line readers to add messages written off-line.

There are two methods of adding a message to a conference by hand. The first is to 'say' a new message. This starts a new conversation (thread) which will grow as other users "comment" to your message. To comment to a message you have just read, you type COMMENT and then enter your reply.

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Messages are entered using a text 'gobbler' which reads in the text you've entered and provides no editing tools at all. Once the message is entered it can be modified using one of the built-in editors, neither of which are easy to use.

The 'verbose' editor is aimed at beginners and is the default for new users. It only has a few options, most usefully, LIST (which lists the message entered so far, including line numbers for other options), APPEND which puts you back in the text gobbler, DELETE which deletes lines, EXIT (saves the changes you have made), QUIT (which doesn't) and SUBSTITUTE.

The substitute command gives you a limited search and replace capability. Firstly you enter the number of the line you wish to edit, then you enter a text string such as /uurdvark/aardvark/ for example, will cause occurrences of the word uurdvark to be replaced with aardvark on the line specified.

The second CIX editor is the 'quiet' editor, it's more powerful, and aimed at the more experienced user. The list function is still there, but you must specify the lines you wish to see. You can also insert text between other lines and move incorrectly placed lines around. There are also search and replace commands which can be made 'global' to operate on the whole file.

The quiet editor is more powerful but more difficult to use. Most of the time the extra features won't be needed, and when they are, you will probably have moved on to off-line reader anyway.

THE HANDSOME PROFILE

Once you get used to using CIX you will want to customise it to your own requirements. This is where a file called PROFILE comes in. A profile is a list of commands, identical to those you type in at the command line, which are executed when you log on to the system.

The profile sets things like the type of editor to use, the transfer protocols you wish to use etc. New users get a default set of commands which show the current contents of your mailbox and any news items the administration wish you to see. There are plenty of changes that can be made though, and you'll soon have a fully customised start up, which does exactly what you want.

The CIX system is based on a system of subject areas, called conferences, each of which is divided up into one or more topics. Topics for individual conferences vary. There is usually a topic for general talk and a 'chatter' topic for discussion which is not necessarily related to the conference subject. Conferences covering subjects that require files, C programming for instance, will often have a 'files' topic.

Other conferences may have a range of other topics, for instance, the horror.cafe conference has topics on films, news, books and magazines, among others. And the names vary, some of which are very obscure, the Lemmings conference for example has two topics, ASYLUM for people who play *Lemmings*, and COLD_TURKEY for those who don't.

There are three types of CIX conference. OPEN where anyone can join and participate, CLOSED where members must be joined by the moderator of the conference and CONFIDENTIAL where the conference is secret, and can't even be seen on the conference list. Most conferences are open, with closed and confidential areas used for program support or development conferences.

After a while you are bound to want to download a file. First, you need to know the name of the file. If you don't know the name already you can look it up in a topics file list using the FLIST command.

FLIST supplies a list of all the files available in the current topic, usually with descriptions. Downloading is simply a matter of typing FDL FOOBAR.LZH (or whatever) and setting your comms software up to receive the file using the appropriate transfer protocol.

CIX also supports a feature called a RESUME. A resumé is a piece of text which you write giving information about yourself. If someone encounters you on CIX, they can then take a look at your resumé to find out a little more about you. And you can do the same: some of the resumés are very interesting.

The macro capabilities are another powerful feature of CIX. Macros enable you to create your own commands containing several standard CIX commands to automate a process you do regularly, archiving all unread messages for example.

Unlike some other conferencing systems there are no on-line services such as share prices, electronic shopping or weather reports, but what CIX lacks in services it makes up for in diversity of subjects covered. Just about every subject can be found in some form.

Of course there is an active Amiga conference including specific topics for Workbench 2 users and emulation of other machines. Also on the Amiga front, ICPUG (Independent Commodore Product User Group) has two sections, one for non-members and another for members only.

Magazines feature strongly, including the *Amiga Shopper* conference and some of the subscription-only publications such as *JAM* or *AmigaWare*.

There are a few program oriented conferences; Arnor, HiSoft and Argonaut have conferences, although HiSoft has opened a closed conference where registered users can obtain technical support. The Argonaut conference is pretty dead.

Another conference of interest to Amiga owners is AMReport. This is devoted to a text file based magazine from the US, and although there is little chatter about the magazine, the file is full of interesting news and articles.

Other computers are catered for of course, with PCs being the most popular. But there are also conferences for the minority machines including Z88s, Sharp machines and even STs!

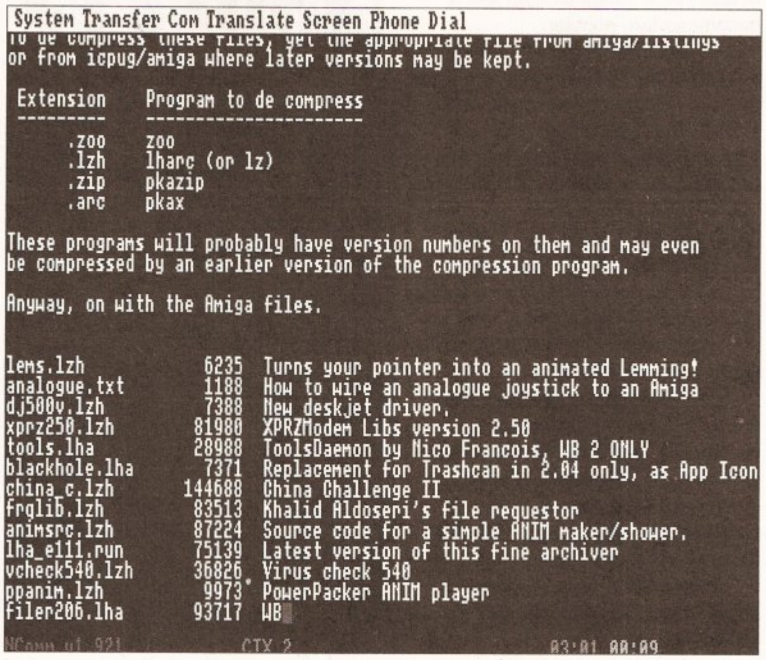
But there is also a massive range of more general, non-computer related conferences. Games are popular with areas for Infocom adventures, role-playing games, video games and more specific subjects such as Backgammon and *Gods* (an on-line multi user game).

THE SOCIAL SCENE

There are sections devoted to the social side of CIX with areas for specific parts of the country and even a lonely hearts conference for romantic hopefuls. There are also plenty of general nonsense conferences where wibble is the order of the day, 'notherestoby' being the most popular, currently averaging 200-300 messages a day, mainly from super-user Dave Winder.

Hobbies feature strongly with areas from martial arts to kite flying and more. And there are areas for those difficult questions, including a specific area for legal queries.

There is also a CIX administration conference for announcements, questions and complaints. The CIX conference also includes the STATS topic where daily and monthly stats are posted showing the busiest users, conferences and the most popular files which often makes for interesting reading.



CIX also has a wide cariety of shareware programs available for you to download – how about the animated Lemming pointer?

• CIX SLANG •

The 'experts' often use CIX abbreviations in their messages to get the point across more quickly. Here's a brief guide to interpreting those acronyms...

AFAICS	As Far As I Can See
FAQ	Frequently Asked Question
IMHO	In My Humble Opinion
IYSWIM	If You See What I Mean
ROFL	Rolling On Floor Laughing
RTFM	Read The Friendly Manual
TPTB	The Powers That Be
UKP	UK Pounds, used to get around the lack of pound sign (£) on some systems

With the profusion of conferences there needs to be a way of finding the ones that interest you: there are two alternatives. The first, 'official' method is to consult the Conference list. This list (over 75K of data) contains all the conferences available, three quarters of which are sorted into categories. The remainder are tagged on the end and have yet to be sorted. Unfortunately this means that you have to wade through the list to find the new conferences at the end.

The alternative is an independent conference set up to provide an up-to-date conference list in archived downloadable form. Dave Evans has done a splendid job in tidying up the conference list and the alt_conf_list conference is well worth a look, although it will always be a little behind the 'official' version.

In addition to the conference facilities Electronic Mail is available, including 'binmail' for sending files to other CIX users. The status of your mailbox can be shown at any time and includes information on whether the person you sent the mail to has read it yet.

The other important area on CIX is the USENET gateway. Usenet is a network of Unix machines from all over the world. It is a conferencing system just like CIX but based in the US. Usenet is split up into conferences called 'newsgroups' and you'll find similar subjects to those on the main CIX board.

Usenet is much bigger; a great many universities and colleges have access to the system and some conferences get rather busy, the Amiga areas included. Usenet messages are deleted every eight days so you need to visit regularly if you wish to keep up with it all.

Unfortunately, Usenet is read only so this limits its usefulness, although it is possible to post messages via CIX . Even without the write access however you can expect an awful lot of information to come from Usenet so be prepared for big downloads of messages.

Finally a quick mention of the CIX on-line game, *Federation II*. This space trading game has proved remarkably unpopular, mainly due to its cost, is really something to avoid, at least until things pick up and it becomes more popular.

There are many other commands available, too many to detail here but there is a comprehensive help facility available to keep things running smoothly and, if you get stuck, there will always be someone to help.

SET UP ON YOUR OWN

Sooner or later you will want to start up your own conference. You'll soon find yourself dying to set up that important bobble-hat knitting conference CIX hasn't got.

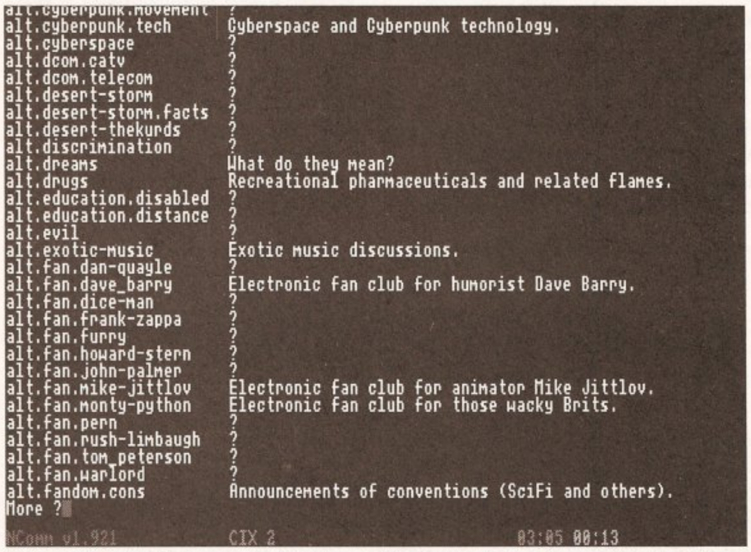
First off is to check to see that there is some interest in such a conference, and that one does not already exist. There is a special conference topic for this, conference/suggestions. So that's the first place you should go.

Once an interest has been shown you need to create your conference. Doing so makes you the 'moderator' of that conference and you become responsible for looking after it and keeping any file lists you may have up-to-date.

To kick off, you will need a couple of topics to get you started; general chatter and files (if required) are a good start although more interesting names are preferred. Then you need to leave a few starter messages, details of a new bobble-hat pattern you've found, or whatever, to start the conference.

You will often need to "keep the pot boiling" by posting questions, comments or ideas, particularly when the conference is young. If you don't the conference will become boring and die off. Some conferences die a death. Others however, against all odds, grow and grow until they become overwhelming, notherestoby springs to mind!

The manual is pretty vague in some places and it can be a struggle for new users to get the most from the system. But help is usually close at hand and most users will help out, if only to point you in the direction of the beginners' conferences.



Before downloading, you need to know the name of the file you require. The command FLIST gives a list of those available, complete with descriptions

SMILEYS



The biggest problem with electronic communications is the lack of tone and facial expression within a message. To get around this a system of icons called SMILEYS have evolved, they are used to help clarify the mood of the message writer.

:-)	Happy smiley
:'-)	Very happy smiley
8-)	Happy with glasses
:-(	Unhappy smiley
:'-(	Very unhappy smiley
:-O	Shocked smiley
;-)	Sarcastic smiley
[8-)	Smiley with glasses and a crew cut
:-=	Vampire smiley

To get the full effect you need to turn your head sideways... there you are, that's better isn't it? Now, you can see those faces in all their glory!

OFF-LINE READERS

Once you get the hang of CIX you will find yourself joined to a many conferences, spending more time (and money) reading the messages, particularly in the busier conferences. This is where a good off-line reader can be invaluable.

Using the SCRATCHPAD an off-line reader allows you to download messages you are interested in and read them off-line. You can spend as long as you like reading and replying without spending too much money. Once you've finished you can upload the messages you have written in a matter of minutes. Uploading is done by hand or by using special script files for communications packages such as *NComm* or *JRComm*.

There are off-line readers for most machines, the Amiga one is called Query and although difficult to set up, it is worth the effort, the savings are tremendous, and it's PD.

There is also a new shareware off-line reader on the way, currently called NICOLA. Apparently it will be a very user friendly program, complete with Intuition interface. No details of when it will be finished though.

An off-line reader is essential for serious use. It allows you to join more conferences and participate more than if you spent all your time on-line. Once you get one you will find yourself posting many messages and perhaps end up in the stats.

CIX does have its drawbacks. The drawback is the cost, CIX isn't cheap but with off-line readers at your disposal bills can be kept to a minimum. The first charge is the start up fee of fifteen pounds. For this you get a manual, and little else.

From then on it costs £2 per hour off peak and £3.10 per hour during peak hours. Usage is subject to a minimum charge of £6.25 per month, and this excludes VAT so the minimum charge per month is £7.34. The biggest disadvantage is the requirement that bills be paid by credit card, only companies can pay by cheque, and they are subject to a minimum charge of £15. Oh, and CIX T-Shirts cost £3.

CIX is an amazing place. It's incredible how people who often never meet face-to-face can become the best of friends. People do get together though, either at CIX parties or at computer exhibitions and the results are always enjoyable. Give it a whirl: if you do, drop me a line in the *Amiga Shopper* conference and let me know what you think.

CIX can be found on 081 390 1244 or 081 399 5252, and have your credit card ready.

Next month we'll be taking a closer look at the social aspects of modem life, and what you can get out of it all.

Philip Harris can be contacted on CIX as pilharris and does not work for CIX.

Cracking the Shell

Mark Smiddy delves into the theory behind AmigaDOS and picks a few locks on the way



"Making boot disks with that personal touch needn't be as difficult as you might think."
Mark Smiddy

Many beginners just starting out with the Amiga and even seasoned experts find a single disk system very limited because the machine has a nasty habit of constantly asking for Workbench. Beginners often accept this irritation as a feature of the system – indeed, that's exactly what it is – but hardened users curse it constantly while they save up for an extra drive. Curiously enough, a lot of disk swapping could be avoided if developers spent more time constructing Workbench disks tailored to their applications.

The problem is this: the Amiga's software is a two-tier system. The main driver software – windowing system (Intuition), multi-tasking, memory management and so on, is stored in ROM. The secondary, less important software such as maths libraries and device handlers, is stored on disk and only retrieved as required. This method might seem a little outlandish, but it's central to the Amiga's versatility. Just for openers, there isn't enough room in the ROMs to store all the libraries; but there's more to it than that. New libraries can be added at any time, either by Commodore or other developers, which add more functionality to software.

WHERE IS IT, WHAT IS IT?

Apart from the libraries, most AmigaDOS commands are stored externally on disk and only held in memory while they're being used. (That's where the name "transient command" comes from.) Additionally, most of the Amiga's wide range of fonts (type styles) are also held on disk. In fact, only Topaz font is actually resident in the system when it's switched on; all the others are loaded from disk as required. Interestingly enough, diskloaded fonts are themselves handled by an external (diskloaded) library.

You are probably aware too, most commands are found in the C directory. Because all these items are (usually) found on the boot disk you can see why all those disk swaps are necessary even for a simple operation such as formatting a disk or changing type style.

Such things are a lot simpler with Workbench 2 because it can be configured to take external fonts, commands and libraries from any suitable disk. But since most of you will still be battling with Workbench 1.3 for some time to come, I'll leave those details for some future edition.

Perhaps the best way to learn about boot disks is by example. In last month's article, I covered some of the structure of a boot disk – this time I want to take you through some of the theory in more detail. The most common boot disk is Workbench, so let's look at that first.

A typical Workbench disk has a number of locked objects – directories. Some of which are set up automatically when the disk is mounted; others during the startup sequence. These fall into two categories: logical device assignments such as DEVS: and CLIPS: and path assignments like System. Of these, only the device assignments are made by the system.

I expect by now your eyes are starting to glaze over a little: relax. To explain: paths are used by AmigaDOS to locate commands; devices are used for private system files, libraries and fonts. Two commands can be used from the Shell to view the current settings: ASSIGN, shows the devices and PATH shows the paths. Here's what they do:

PERFECT PATHS

Enter PATH from the Shell and you'll get something like this:

```
1>PATH
Current_directory
RAM Disk
Workbench 1.3:C
Workbench 1.3:System
Workbench 1.3:S
Workbench 1.3:Prefs
Workbench 1.3:Utilities
C:
```

This is a listing of the directories AmigaDOS will "search" when you enter a command. A command can be defined as: "The sequence of letters entered at the console, up to the first space, terminated by a carriage return.

Any characters entered after the first space and up to the carriage return are arguments." Ergo, if you entered:

```
1>DIR DF0: ALL
```

DIR is the command.DF0: and ALL are arguments passed to it.

Most of you are probably aware of this – but understanding why it works is vital to understanding how paths work. You probably also know if you entered:

```
1>DIRDF0:ALL
```

AmigaDOS responds with an error.

Two factors are crucial here:

a) the spelling of the command and,
b) its location in the disk hierarchy.

Provided you spell the command's name correctly, and if it's in the path, AmigaDOS will always find it. I'm pointing this out because we just tend to take it for granted – until something doesn't work. In order to illustrate this, try the following commands – in this sequence:

```
1>CD SYS:
1>PATH RESET
1>ECHO Testing
Testing
1>FIXFONTS
Unknown command FIXFONTS
```

ECHO works quite normally, but AmigaDOS returns an error when you try to run FIXFONTS. Think about that for a moment while you try this.

```
1>CD DEVS:
1>SYS:System/FIXFONTS
1>CD SYS:System
1>FIXFONTS
```

In both instances, FIXFONTS works quite normally. (FIXFONTS was chosen for this example because it gives the most constant results between revisions. More or less the same effect can be seen with FORMAT and DISKCOPY.)

Although you may not have realised it, you have just seen the effect of PATH. In the first sequence, the path setting was reset back to its default; so only the current directory and the C: assignment are automatically searched. In the second sequence, the path was forced (SYS:System/FIXFONTS) and

JARGON BUSTING • JARGON BUSTING

File – A collection of data referenced by name.

Lock (1) – A structure pointing to any object on an AmigaDOS disk. Locks are actually just numbers used to address directories and files. The structure points to (defines the location of) the object in the directory heirarchy. Locks are used by ASSIGN and PATH to locate directories on mounted or locked volumes. A volume is automatically locked when an object located on it is locked.

Lock (2) – Defined in Mike Nelson's Intuition book as: "A totally ineffective mechanism for deferring car thieves. It's incredible that modern technology which can put man on the moon and get him back, or land a 600mph cruise missile into someone's breakfast cereal cannot defeat a 14 year old halfwit with a screwdriver who wants an afternoon's ride in a £15,00 car."

Mounted Volume – A disk that is joined to the system by a lock and currently inserted in one of the drives.

Object – A file or directory on an AmigaDOS disk.

Volume – An AmigaDOS disk is a volume (a book if you like). The directories are the chapters and the files are the pages in the chapters.

AmigaDOS Masterclass

With Workbench 2 it is possible to get a list of the current devices, volumes or directories simply by adding an option to the ASSIGN command. This can be handy and Listings 1 and 2 are short scripts aimed at getting just this information from the command.

Listing 1 displays just the information in the Directories part of the listing, the second displays only mounted volumes in the Volumes section.

LISTING 1 • LISTING 1 • LISTING 1

Usage: [Execute] DIRS

```
1. ASSIGN >T:temp
2. ECHO "Directories:"
3. SEARCH T:temp "  " nonum
```

Listing 3 uses a similar method (using PATH) to check on the setting of any particular path.

As always, if you are going to use these scripts much you should save these in the S: directory and set their S (script) protection bit (see smiddy'sRed Hot Tip).

HOW IT WORKS: LISTING 1

Usage: [EXECUTE] DIRS

1. Send the output of the ASSIGN command to a file.
2. Print a screen message indicating what the display is.
3. Use the search command to find any lines containing two or more spaces.

Only lines containing directory assignments carry this information, therefore they are the only ones displayed.

The "NONUM" option has been specified to prevent line numbers being printed.

LISTING 2 • LISTING 2 • LISTING 2

Usage: [Execute] VOLS

```
1. ASSIGN >T:temp
2. ECHO "Mounted volumes:"
3. SEARCH T:temp "]" nonum
```

HOW IT WORKS: LISTING 2

Usage: [EXECUTE] VOLS

This short program works in much the same way as DIRS above, only this time the listing is searched for the substring "]".

When this script is executed only mounted volumes are displayed. You must use ASSIGN to discover which volumes are locked (available) but not currently mounted.

HOW IT WORKS: LISTING 3

Usage: [EXECUTE] PATHFIND <PathName> [QUIET]

This little goody first appeared in Volume 2 of Mastering AmigaDOS 2, and while nothing earth shattering, it's still quite useful. The idea of this one is to allow you to view a single path, if it exits. Also, a feature of the search command means you only have to type the first few letters to get info on the required path. For instance:

```
1>PATHFIND S
Workbench 1.3:System
Workbench 1.3:S
```

or

```
1>PATHFIND SY
Workbench 1.3:System
```

It works like this:

1. Determines the command's argument template: PAT/A,Opt. Pat is a substring of the pathname you're interested in; Opt is passed directly to PATH and will normally be the QUIET option.

LISTING 3 • LISTING 3 • LISTING 3

Usage: [Execute] PATHFIND <PathName> [Quiet]

```
1. .KEY PAT/A,opt
   .BRA {
   .KET }
2. PATH >T:ptemp SHOW {opt}
3. SEARCH T:ptemp ":{PAT}" NONUM
```

2. Sends the current path settings to a temporary file. If the QUIET option has been specified as part of the command line, PATH will not put up any "Please insert volume..." requesters.

3. Searches and displays any paths matching the substring.

Note a colon is inserted prior to the search string. This forces the search to start immediately after the volume name. This should be omitted if you want to search for partial strings anywhere in names.

Directory paths are always searched from top to bottom, so you may wish to omit the NONUM option in line 3.

Omitting the third line will show the priority of the particular path in the search, for instance:

```
1>PATHFIND S
4  Workbench 1.3:System
5  Workbench 1.3:S
```

In essence what this means is that "System" will be searched fourth, and "S" fifth.

LISTING 4 • LISTING 4 • LISTING 4

Usage: [Execute] VOLS

```
.KEY DRIVE/A,NAME
.DEF NAME Lazy_Bones
Echo "Making a simple boot disk - ↲ please wait"

FORMAT DRIVE DF<DRIVE>: NAME <NAME>
INSTALL DF<DRIVE>:

Ask "Do you require fonts Y/N?"
IF WARN
 COPY Fonts: DF<DRIVE>:Fonts ALL
ELSE
 MAKEDIR DF<DRIVE>:Fonts
ENDIF

ASK "Do you require a complete ↲ system Y/N?"
IF WARN
 COPY SYS:System DF<DRIVE>:System ALL
 COPY SYS:System.info DF<DRIVE>:
 COPY SYS:Shell.info DF<DRIVE>:
ELSE
 COPY SYS:System/(FastMemFirst↲ |SetMap) DF<DRIVE>:System
ENDIF

MAKEDIR DF<DRIVE>:Utilities
COPY L: DF<DRIVE>:L ALL
COPY Libs: DF<DRIVE>:LIBS ALL
COPY Devs: DF<DRIVE>:DEVS ALL
COPY S: DF<DRIVE>:S ALL
COPY C: DF<DRIVE>:C ALL

Echo "Operation complete..."
```

then made the current directory (CD SYS:System).

When you reset the path (as above) or when the machine boots, only C: and the current directory are searched. All other paths must be added during startup. For high-speed boot disks, you can exclude the path command altogether provided all your executable code resides in the C directory.

To summarise, every time you enter a command, AmigaDOS searches through each directory in the path until:

a) it finds the requested command, or
b) the path is exhausted. In this case it reports unknown command.

The search algorithm is very powerful, and AmigaDOS can search a large number of directories with little perceivable performance degradation. It's also important to note, the first file found matching the requested name will be executed – and this can create some queer effects if you include odd directories (text directories) in the path. Also, the resident list is normally searched first – so resident commands work faster.

DELIBERATE DEVICES

Devices and directory assignments are handled by ASSIGN. In Workbench 1.3, and using its most basic syntax, ASSIGN delivers a listing like this:

```
1>ASSIGN
Volumes:
Workbench 1.3 [Mounted]
Empty
RAM Disk [Mounted]

Directories:
CLIPS       RAM
Disk:Clipboards
T           RAM Disk:t
ENV         RAM Disk:env
SYS         Workbench 1.3:
C           Workbench 1.3:C
S           Workbench 1.3:S
L           Workbench 1.3:L
LIBS        Workbench 1.3:Libs
DEVS        Workbench 1.3:Devs
FONTS       Workbench 1.3:Fonts

Devices:
PIPE AUX SPEAK RAM
CON NEWCON RAW PAR
SER PRT DFO DF1
```

Don't worry if the listing on your screen doesn't look exactly like this; the bit we're interested in is in the middle – the directory assignments. There are ten in all on this sample, seven of which are automatic assignments: that's to say AmigaDOS locates and assigns each one by name when the disk is booted. You may remember, logical directory assignments behave very much like disk drives. For instance,

```
DIR DEVS:Keymaps
```

which treats "Keymaps" as a directory on a device DEVS: and

```
COPY S: to PRT:
```

which copies the contents of device S: to device PRT: are perfectly valid statements. This latter is an interesting one because it dumps all the scripts in the S directory to printer.

The top three directories (CLIPS, T and ENV) are manual assignments accomplished with MAKEDIR and ASSIGN in the Startup-sequence. Broadly speaking, every AmigaDOS boot disk should contain the others: C, S, L, LIBS, DEVS and FONTS. However, if one or more are missing the disk will boot but many programs will not work. AmigaDOS 2 is a little more complex, so I'll come to that later. The SYS: assignment defaults to pointing at the boot disk's root directory, although it can be redirected elsewhere. Listing 1 in this month's Masterclass can be used to display just the directories.

PICKING LOCKS

One of the interesting effects of a multi-tasking system is that many programs may have access to the same object; it could be a file, a directory or even an entire disk. When a program requests access to an object it is given access to its shared lock – a key if you like.

It's worth pointing out here, once a file is opened for write access no other program can gain read access to it. Similarly, write access cannot be granted if any read or write locks exist. This avoids confusion that would ensue if one program read from a file that another program is in the process of updating. It's rather like someone setting fire to a newspaper while you're reading it.

Most commands use locks; some temporary, others permanent. Temporary locks are only valid while the program runs. SEARCH for instance, locks each file it searches while it reads it. When it reaches the end of the file, the lock is removed. ASSIGN and PATH attach permanent locks to directories; that is, the lock remains valid even when the program has terminated. AmigaDOS maintains a private list of locks so they can be examined or removed (cancelled) at any time. Other commands, such as MAKEDIR, attempt to lock the requested name to check if the object already exits. Try these examples yourself:

a) PATH makes a permanent (read) lock

```
1>MAKEDIR RAM:Test
1>PATH RAM:Test ADD
1>DELETE RAM:Test
RAM:TestNot deleted: object ↵
in use
```

First we create a directory and add it to the current path. The directory is now locked and when we try to delete it, we get an error object in use. AmigaDOS doesn't identify the owner(s) of the lock. It is not possible to cancel a single path from AmigaDOS 1.3, so we'll leave it in place for this example.

b) ASSIGN creates a permanent (read) lock

```
1>MAKEDIR RAM:Testing
1>ASSIGN Test: RAM:Testing
1>DELETE RAM:Testing
RAM:Testing    Not deleted: ↵
object in use
1>ASSIGN Test:
1>DELETE RAM:Testing
```

This works rather like the first example, although the assignment can be cancelled and the directory removed. This would not be possible if another program currently held a lock on the object in question.

c) MAKEDIR tests with a temporary lock

```
1>ECHO >RAM:dir "Dummy"
1>MAKEDIR RAM:dir
RAM:dir already exists
```

First create a file and attempt to overwrite it with a new directory of the same name.

d) Redirection tests with a lock.

```
MAKEDIR RAM:exists
ECHO >RAM:exists "Fred"
Shell: unable to open ↵
redirection file
```

Create a directory and attempt to write over it with a file of the same name. AmigaDOS does not grant a write access lock and the command fails.

e) ASSIGN and PATH can share a read lock

```
1>MAKEDIR RAM:Shared
1>ASSIGN Share: RAM:Shared
1>PATH Share: ADD
```

Here the directory is assigned a logical name and that name is added to the path.

The two commands now share access to the same object – a directory in this case.

SMIDDY'S RED HOT TIP

This month's tip is not a new one, but it's worth repeating once in a while, "lest we forget". When you've just entered two or three scripts, a fast way to access them without having to enter EXECUTE <scriptname> is to set their S protection bit. This makes AmigaDOS call EXECUTE for you; and the easiest way to do this in one fell swoop is this:

```
1>SPAT PROTECT S:#? +S
```

After a few seconds, every script in the S directory is automatically executable. Neat. (This has no noticeable effect on configuration files for programs such as *Access!* and *SID*.)

GOTTA PROBLEM?

If you get stuck with AmigaDOS or there is anything specific you would like to see covered here, drop a line detailing your conundrum to: Mark Smiddy, Amiga Shopper, 30 Monmouth St, BATH, BA1 2BW. Sorry, no personal correspondence can be entered into. You can EMail me on CIX @ "SMIDOID".

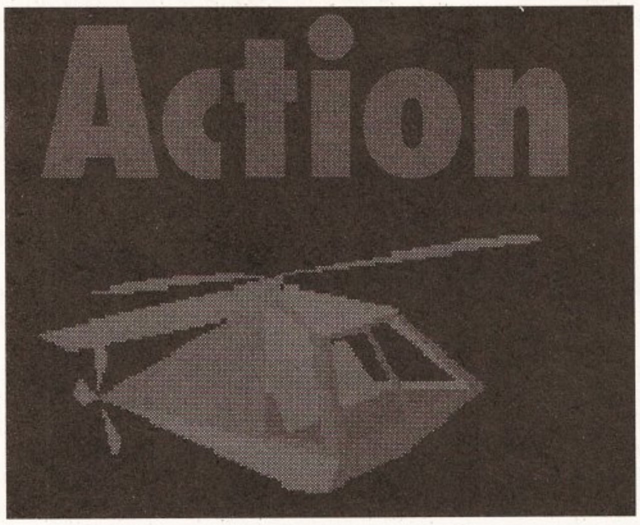
ALL THE KING'S THEORY

All this theory might seem a little far removed from boot disks, but a better understanding about these parts of the system will help you make more intelligent use of the disk space available; and help identify problems quickly when something goes wrong. All that aside, I'll finish off this month with an honest little script which takes a lot of the labour out of creating a boot disk in a hurry.

Listing 4 in this month's AmigaDOS Masterclass requires a Workbench disk and will create a stripped down version suitable adding some of your own applications. It takes two arguments: the drive number the disk will be created on (DF0: for instance is entered as 0) and, optionally, the name of the disk. The implementation is fairly straightforward and you should be able to follow it without further explanation. So, until next month, may I wish you all "bovver free booting". AS

AMOS

This month our AMOS chief Phil South looks into the new Easy AMOS system for beginners, the second issue of Totally AMOS disk magazine, not forgetting the usual AMAL tutorial plus more hints and tips from the big wide world of AMOS



One of the new pictures included on the ***AMOS 3D Modeler Disk 1.2.*** **If you're not one of those arty types able to whip up a quick pic, these images can be used wherever you like in your own programs**

AMOS doesn't stand still, and so neither does this column. There's a lot of exciting stuff around the corner that's nearly ready for release. In fact there's a couple of things due out from Deja Vu Software which I can't talk about which are really very interesting indeed. A couple of things which have bugged me in particular for some considerable time have finally been addressed, and a very elegant solution it is too. But more of this next time when I hope to have some copies of the software, exclusive to this column. Watch this space.

FADE AND APPEAR

This month I'd like you to consider some of the options for presenting your graphics in an AMOS program. OK so your program isn't a game, but there's no reason why this should mean it looks bad. Some of the presentation tools at your disposal are FADE and APPEAR.

Fade does just that, if you want to fade to black or even another colour, then this will do it. The effect is the same as a fade in a movie, if you've got something on the screen you can fade it out to black (or even another colour!) using the Fade command.

Fade works very simply:

```
Fade [speed]
```

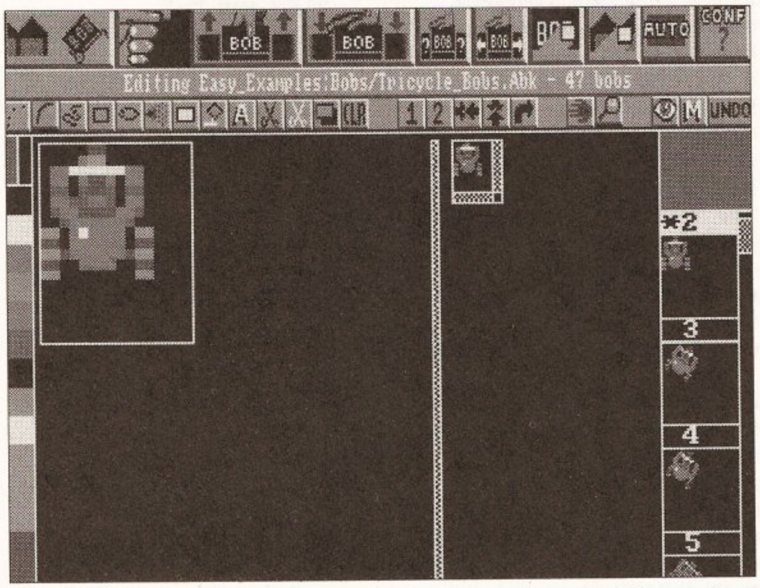
where SPEED is the speed of the fade. If you don't mention any colours the fade will be to black. Why would you want to fade to anything but black? Well how about if you put a logo on the screen, very large, then fade it to red for example and then print the instructions to your program in white over the top of it? Very classy.

You can also fade to the palette of another current screen, like so:

```
Fade [speed] To [x]
```

where speed is the speed of the fade, and x is the screen number containing the new palette. Try this for size:

```
' Fade demo program
'
Do
   S$=Fsel$("*.*","","Load ↲
yourself a screen") : If ↲
S$="" Then Edit
   FADIFF[S$]
   Wait Key : Fade 2 : ↲
Wait 16*2
Loop
Procedure FADIFF[A$]
   Fade 1 : Wait 16
   Auto View Off
   Load Iff A$,0 : Screen ↲
Clone 1 : Screen To Front 0
   For X=0 To 31 : Colour ↲
X,0 : Next
   View : Auto View On
   Fade 3 To 1 : Screen ↲
Close 1
End Proc
```



The *Easy Amos* bob editor is part and parcel of the main system. No messing aound loading the program in separately, the bob editor can be found as an option on one of the *Easy Amos*' menus

Appear is another kettle of fish entirely, although in some ways similar. With this command you can "crossfade" between two screens, like so:

```
Appear 0 To 1,20
```

This transforms from one picture to another using the last number to determine the effect of the fade, that is to say how the transformation occurs. The best numbers to choose are odd numbers which are not divisible by 5, strange but very true. Try out a few numbers with this program:

```
F$=Fsel$("*.*","","Select a ↲
picture")
If F$="" Then Edit
Load Iff F$,1
If Screen Width>600 Then ↲
REZ=Hires Else REZ=Lowres
Screen Open 0,Screen ↲
Width,Screen Height,Screen ↲
Colour,REZ
Screen Open 2,320,50,2,Lowres
Screen Display 2,,250,,50
Screen Open 3,320,10,2,Lowres
Screen Display 3,,40,,10
Rem Initialise screens
Screen 0 : Screen To Front ↲
0 : Get Palette(1) : ↲
Screen To Front 2
Screen To Front 3
Flash Off
Do
   Screen 2 : Input ↲
"Enter effect ";E
   If E>0
      Cls : Screen 0
      Appear 1 To 0,E
   End If
Loop
```

Each time you enter an effect the blank screen is acted upon revealing the screen below. OK, so it's not a very smooth crossfade, but what do you want for your money? Value? I'll be looking at some more presentation effects and techniques next time, but until then let's take an exciting first look at *Easy AMOS*.

EASY PEASY

Yes, you heard right, *Easy AMOS*, and from the short time I've had to play with this beta copy it looks really very good. The idea behind this new version of the program is that new users or kids can get a grip on AMOS without a lot of the very technical stuff getting in the road. *EA* isn't just a cut down version, although it features about 300 commands instead of the usual 600 or so. Its main objective is not to be smaller, but easier, hence the name. The main change you notice right away is that the editor has changed quite a lot, and it now looks a lot more like Workbench 2.0, although why everyone does this I don't really know. It does look nicer, although the functionality of the screen isn't altered much for all the 3D effects and colour changes. The reason for

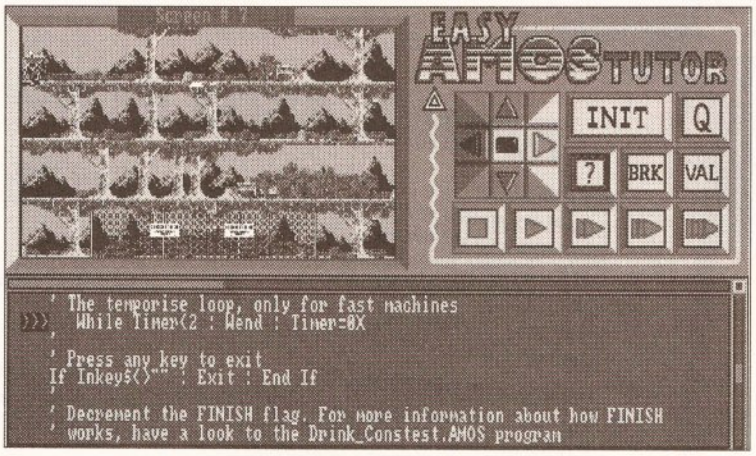
the cosmetic change is to be more appealing to kids, apparently, but I can't see that myself. But then again I'm not a kid so how should I know?

The most major omission compared with AMOS is the exclusion of AMAL, one of the key animation tools in the AMOS arsenal. This is more than compensated for by the *Easy AMOS* Tutor, which is a most advanced programming tutor I've ever seen. The Tutor features three windows: one for your AMOS code, one for variables and expressions with their values, and finally a window with your program output. The programs execute line by line so you can see all the program's important little places whilst it is actually running, meaning not only can you trap bugs but you can also see how your program works. Triffic. The Tutor is able to run at different speeds too, so you can slow it down to see it all in action, or speed it up to real time to check it all looks OK!

Because it is a beginners' program it won't allow you to run the master either, it makes a working copy for you before you begin. Once it's all set up you have three disks, one master program disk, one tutorial disk, and one examples disk. The examples are many and various, covering all manner of useful utils to show how AMOS copes with programming "proper" programs. Like AMOS Disk, for example, which is a sort of disk utility program like *SID* or *DiskMaster* et al. A lot of other utils are bolted on to the main system, rather than being separate AMOS programs, so the bob editor (there are no sprites in AMOS) is a menu option rather than a program you load. Another snappy option which *Easy AMOS* has over conventional AMOS is the ability to load *Soundtracker* and *Noisetracker* type tunes, using the TrackLoad command. This is good news to everyone except the people who are writing libraries to make AMOS do this.

Another type of program to be included in the package is a progress tester. This is a quiz to see how well you are doing in your quest to learn AMOS, by asking you questions and logging your answers. If you pass a certain stage you get a diploma on screen. This is another bit of zippy design for the younger user, and is sure to go down well with them.

On the upside *Easy AMOS* is probably a foretaste of what we can expect with the next major revision of AMOS, AMOS 2.0. Obviously the design is not by accident, and if you added AMAL and sprites to *Easy AMOS* it wouldn't be that different from the real thing. Both AMOS 2 and *Easy AMOS* will only run in 1Mb Amigas, which is one thing that will make a few people a bit cross. Mind you anyone who's still only running a 0.5 Mb machine will run into this sort of thing all the time by now. And new Amigas all have 1Mb on them, so no worries there. Watch this space for further developments.



***Easy Amos* Tutor is one of the most advanced tutorial programs about. Featuring three windows, so you can keep an eye on your code, variables and output, the tutor can even run at different speeds making life a lot easier**

On the downside, the manual has a *funny* cartoon character to appeal to the kids, and it's written by *funny* writer Mel Croucher, who also I seem to recall designed the *funny* character and wrote the *funny* manual for the Sam Coupé. Hmm. I'm not convinced that this approach really works, and some kids and older beginners might find this sort of thing a bit, well, childish for them. But the content is OK, and in spite of my poking fun at Mr Croucher's style, he has a done a nice job on the manual, it being easy to read and apply. (He wrote *Pimania* and *Deus Ex Machina* for the Sinclair Spectrum, so he can't be all bad!)

I have to say that this is one of the best beginners' programming languages I've ever seen. The docs are readable and nicely printed, the program easy to use and the Tutor program the most powerful program utility for a small system ever devised.

This is the first time a language has been used to create a program to teach people how to use the language itself, and it's a very well designed piece of Computer Aided Teaching. "I'm convinced it's a major contribution to road safety", as a certain high ranking ex-policeman was once paid to say, and quite right too. If you want to learn AMOS fast then get this package without delay.

AMOS 3D UPDATE

The *AMOS 3D Object Modeler Disk 1.2* has some great new objects on it. The new OM disk is essentially the same as its predecessor, but with the addition of some new objects for you to use in your own programs. OK so there was quite a few anyway, now there's even more.

Of these new objects one of the most interesting is the idea of using 'inside out' blocks.

Blocks that have been turned inside out by using the group sizing tool are displayed with only 'invisible' faces drawn. This is what you would see if you were inside the block. New objects 'Punt' and 'summer_house' in the examples disk use this effect.

continued on page 102

Using AMAL Part 5

The last AMAL tutorial focused on moving your sprites around and animating them. AMAL is perfect for this just using those commands M and A, but obviously it needs some kind of control structures to make this approach more flexible, so this month we'll look at the use of variables and more complex loops. We mentioned Jump and using Labels last time, but what other forms of control can you use in an AMAL program?

Well, check this out. This program was written by the creator of AMOS, Francois Lionet, and it bounces a screen around. The repeat of the effect is handled with a bunch of loops, all following through to a bunch of labels. See if you can follow where the program is going at any point, and how the program flow changes as things happen.

```
Channel 0 To Screen Display 0
Channel 1 To Screen Offset 0
F$=Fsel$("","","Pick a picture")
Load Iff F$,0
A$=A$+"Debut:Let Y=-256"
A$=A$+"Let R0=256"
A$=A$+"Let R1=8"
A$=A$+"Let R2=45"
A$=A$+"Move 0,R2-Y,R1"
A$=A$+"Loop:Move 0,R2-Y-R0,R1"
A$=A$+"Move 0,R2-Y,R1"
A$=A$+"Let R0=R0/2"
A$=A$+"Let R1=R1-1"
A$=A$+"If R0 Jump Loop"
A$=A$+"For R0=0 To 25"
A$=A$+"Pause"
A$=A$+"Next R0"
A$=A$+"Move 0,320,50"
A$=A$+"Let RA=RA+1"
A$=A$+"Jump Debut"
B$=B$+"Debut:Let X=0"
B$=B$+"Let R3=RA"
B$=B$+"Let R0=320"
B$=B$+"Let R1=10"
B$=B$+"Move 0-X,0,R1"
B$=B$+"Loop: Move 0-X+R0,0,R1"
B$=B$+"Move 0-X,0,R1"
B$=B$+"Let R0=R0/2"
B$=B$+"Let R1=R1-1"
B$=B$+"If R0 Jump Loop"
B$=B$+"Sync:"
B$=B$+"If RA=R3 Jump Sync"
B$=B$+"Jump Debut"
Amal 0,A$
Amal 1,B$
Amal On
Direct
```

The last command means that the Direct mode window is activated, so you can type "Amal Off" if you want to, to stop the movement. Fast isn't it? You could also make the routine stop by adding a Mouse Key command and then throwing in the Amal Off.

The words Loop, Debut, and Sync are all labels, and the Jump command is putting you through each small routine a great number of times. Because Amal is compiled the movement is very fast, almost a vibration rather than a wobble. See if you can alter the program to make the screen bounce off to the left or right randomly as if it's made of rubber.

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AMOS Hints and Tips

Every month I will be printing AMOS hints and programs from my own sources and from you the readers. If you have any hints and tips (preferably accompanied by your listing on a disk) you want to send me, send them to: Phil South, AMOS Action, Amiga Shopper, 30 Monmouth Street, Bath, Avon, BA1 2BW. Or you can e-mail me on: CIX – snouty@cix.compulink.co.uk, Telecom Gold – 74:MIK2077, The Direct Connection – uad1135@dircon.UUCP

● Here's a biggie. A file converter from Atari ST NEOChrome files to IFF, written by Terry Mancey. The program displays any file from a NEO format and you can then save it into IFF using the Save Iff function in direct mode. Nice for converting graphics from a STOS program for use in AMOS. Or any Amiga program!

```
'  NEOCHROME PICTURE READER
'  (c)1991 Terry Mancey
'
Screen Open 0,320,200,16,Lowres
Flash Off
Curs Off
Reserve As Work 15,32128
F$=Fsel$("*.NEO","","")
Bload F$,15
_SHOW_NEO[15]
Wait Key
Default
End
'
Procedure _SHOW_NEO[BANK]
PALT=Start(BANK)+4
For C=0 To 15
Colour(C),Deek(PALT+(C*2))*2
Next C
PICT=Start(BANK)+128
For Y=0 To 199
For X=0 To 19
Doke Phybase(0)+(X*2)+(Y*40),Deek(PICT+0)
Doke Phybase(1)+(X*2)+(Y*40),Deek(PICT+2)
Doke Phybase(2)+(X*2)+(Y*40),Deek(PICT+4)
Doke Phybase(3)+(X*2)+(Y*40),Deek(PICT+6)
Add PICT,8
Next X
Next Y
End Proc
```

● One of the big crits of AMOS from "serious" programmers, is that you can't leave a blank line between sections of the program. As you know AMOS always closes up spaces, and the common solution from AMOSers is to type a "'" for a REM statement in the line. But real programmers can't cope with this. (You'd have thought they'd have better things to do!) In fact you can fit a space in an AMOS program if you really want to, and it's very simple. All you do is press the tilde key, the "~" symbol, and voila! The tilde symbol vanishes when you press return, and the line stays blank. This doesn't affect the functioning of your programs at all, and if it keeps the serious programmers happy, it keeps me happy. Ho ho.

● The Splerge routine is a popular effect, and I've been looking all over for somewhere that demonstrates it. Wouldn't you know it, good old Peter Hickman knew how to do it all the time. (Check out the review of the current issue of *All About AMOS* while you're at it.)

The routine copies one screen to another and pours it in at the top, so the screen builds itself up from the bottom very fast. An excellent routine and one worth adapting for your title screens etc. Nice one, Pete. Oh yes, and of course compiling it makes it even faster! No really, you'd be surprised how certain types of routine, especially AMAL ones, aren't faster when compiled. But this routine is because I checked it.

```
' S P L E R G E E F F E C T
' ©1991 Peter Hickman/All About AMOS
'
Screen Open 1,320,200,2,Lowres
Curs Off
Cls 0
Palette $0,$FFF
For L=1 To 20
Centre At(,L)+"All About AMOS Splerge
Routine"
Next L
Screen Open 2,320,200,2,Lowres
Curs Off
Cls 0
Palette $0,$FFF
SPLERGE[2,1,2]
End
'
Procedure SPLERGE[SPEED,SOURCE,DEST]
Screen SOURCE
SOURCE_SIZE=Screen Height
Screen DEST
DEST_SIZE=Screen Height
V=Min(SOURCE_SIZE,DEST_SIZE)
Screen SOURCE
SOURCE_SIZE=Screen Width
Screen DEST
DEST_SIZE=Screen Width
H=Min(SOURCE_SIZE,DEST_SIZE)
For LOP=V-SPEED To 0 Step -SPEED
For LOP1=0 To LOP Step SPEED
Screen Copy SOURCE,0,LOP,H,LOP+SPEED To
DEST,0,LOP1
Next LOP1
Next LOP
End Proc
```

● You may have been browsing your AMOS manual and tried to use what it says to be two useful functions, namely:

Window Font
Llist

which so the book has it are used in AMOS. Well, if you've tried to use these commands you'll know they don't work, and there's a good reason for this. The commands aren't part of the AMOS language. The reason behind this is that the original AMOS manual was being written at the same time as the program, and the program continued to be re-written in fact, even after the book was finished. So perhaps these commands were intended to be in the program, but not included at the last minute. So it's not your fault that these commands don't work... they don't work on *anyone*'s machine!

continued from page 99

In summer_house two cubes, one regular and the other inside out have been glued together to yield an object with an outside and an inside. Surface detail windows in the regular cube let you see inside. A further block has been placed inside. For all of this to work correctly the block numbers are important.

The example object 'within' demonstrates another effect called double nesting, which is a variation on this theme. As with summer_house, the order in which the blocks are glued together is vital.

The disk also features details of some interesting undocumented Td Commands such as the one to define the order objects are drawn :

```
Td Priority n,p
```

where n = Object number and p = Object drawing priority

This allows you to specify the order in which objects are drawn by the 3D system. In other words objects that are drawn first appear in front of other objects. The command makes some interesting special effects possible.

Priority,p	Object drawing order
0	Draw the object in the normal way (by depth)
>0	Draw the object in front of all other objects with a lower priority
<0	Draw the object behind all other objects with a higher priority.

By default objects have a priority of 0. Note that if two objects have non-zero priority the one with the highest priority will be drawn first (in front).

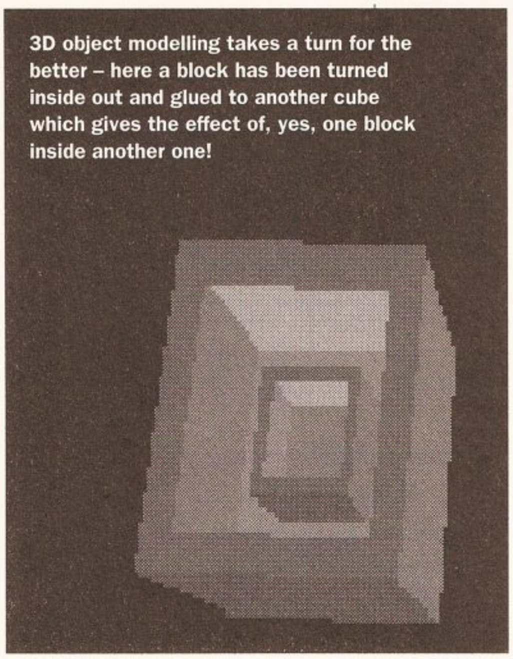
The other undocumented feature is TD SET COLOUR which sets a specified object block's colour combination, like so:

```
Td Set Colour n,b,c
```

where n = Object number, b = Block number and c = Colour combination code of the block (same as in OM).

This command is the language equivalent of OM's colour combination tool described in the 3D manual. It sets the colour combination code of the specified block.

Valid colour numbers range from 0 to 16, colour combinations 0 to 12 are the same as in OM, colour combinations 13-15 are new. An out of range colour code will be truncated to the nearest valid code without causing an error.



3D object modelling takes a turn for the better – here a block has been turned inside out and glued to another cube which gives the effect of, yes, one block inside another one!

Contact Europress Software for further information concerning the OM disk update.

TOTALLY AMOS

The new issue is finally out, and contains a subtle blend of hints and tips, plus features on New PD and Licenseware, a report on the recent World of Commodore Show, *Easy Amos*, Programming Hints and Help, Music and Sound Hints, Graphics and Files on Disk, and Reviews of *Prehistoric Fun Pack*, *Techno Snail*, *Cyadonia*, *Revolution*, *Locks, Keys & Enemies* and of course *Fun School 4*.

For more information about subscriptions to *Totally AMOS*, write to: Totally AMOS, 1 Penmynydd Road, Penlan, Swansea SA5 7EH.

ALL ABOUT AMOS

Issue 2 of this brilliant AMOS magazine is out now, containing articles by all your favourite AMOS experts, plus the customary gaggle of hints and tips, news straight from the horse's mouth and not to mention copious listings. Peter Hickman does a fine job of DTPing the thing on his Amiga, and he's starting to get some mail too.

This month we've got part two of Richard Gale's tutorial on 3D using AMOS, an article about Europress Software revealing the secrets of how AMOS is produced with some natty previews of things to come from AMOS, Gary Symons goes deeper into using assembly language with AMOS, and Kyle Rees goes into the fine points of scrolling a screen around, as in the famous *Kick Off* footie game.

The main thrust of most of the letters is when is *AAA* going to do a piece on "how to write an entire game"? Pete is clearly a little stumped by this. But in the end he says he'll do it, if enough people write in and tell him they'd like to see it. (This is a *good* idea, Peter! Do it, do it!) The quality of issue 2 is up to and beyond the premier issue, with bags more actual stuff to type in and a lot of news stories direct from AMOS Central. I can't really recommend *AAA* too highly, if you're serious about AMOS. If you'd like more info about a subscription to *All About AMOS*, write to: Peter Hickman, *All About AMOS*, Dept AS, 36 Cleverly Estate, Wormholt Road, London W12 0LX. Don't forget to say where you read about *AAA*, will you?

DON'T FORGET

The AMOS conference on CIX, which although is now without Kev Hall for the reasons previously stated, is still going and has many programs and lots of hints and tips for all AMOS users.

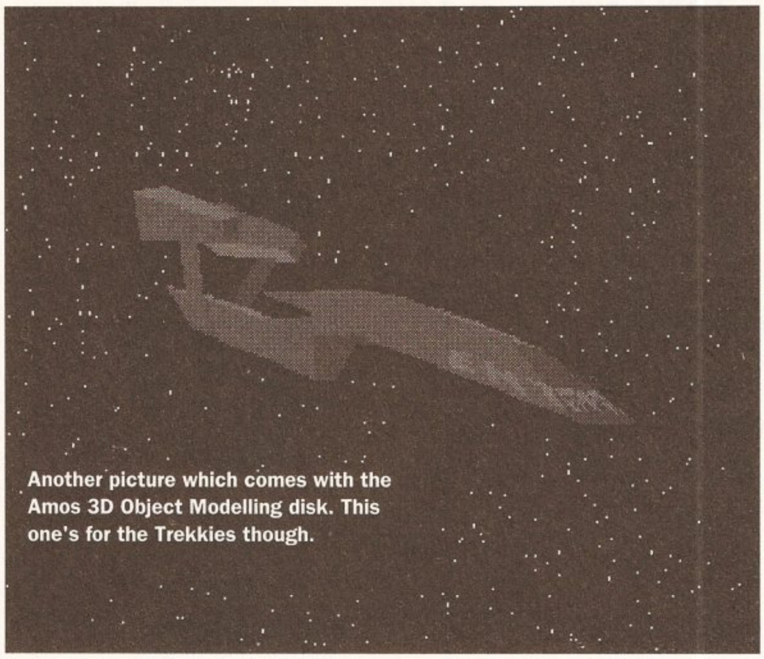
Join CIX by dialling their voice line and asking for details on 081 390 8446. Alternatively just log on to 081 390 1244 and have your credit card at the ready.

PC? WHAT'S THAT?

Oh dear, oh dear. Apparently Francois Lionet the programmer of AMOS, and its predecessor STOS, is working on a PC version called PCOS. I have but one question: why?

DEJA VU CLAMPDOWN

Sandra Sharkey of Deja Vu, the premier AMOS licenseware house, has told me that she won't be accepting any more programs which are simply compiled. Unless the authors supply the source on their disks they won't be accepted into the library any more. The reason is simple, if people don't supply code then nobody can see how clever you are and how you did what you did. The aim of the library has always been to support programmers, not demo collectors. The programs can still be anything you like, within reason, but unless you supply source code, you're out on your ear. Good for you, Sandra.



Another picture which comes with the Amos 3D Object Modelling disk. This one's for the Trekkies though.

AMOS PD SCENE

Not much technical stuff around this month, although Sandra of AMOS PD tells me she's got some hot new stuff due in any second. Two things which stood out were a pair of very professional games, *Tetris* and *Ping-Pong*, which as well as being not bad games are very good demos of what AMOS can do in the right hands, and you can read the source too as this is included.

Tetrix is a version of that popular Russian arcade game, *Tetris*, written by T2000, the collective name for Richard Levy, Peter Barrett, Ted Whitton and Andrew Hopper. About time too for a good version of this game, and it is good, although a little slow. You can compile it for more pep if you want to, and I did, although this makes some of the faster modes a bit more taxing. The program is *very* professionally presented and is a good example of how to produce a finished and polished piece of software.

Ping-Pong by Raymond Webb is based on the first ever computer game, written all that time ago by Atari. This program is an object lesson in how to code an idea simply and quickly, and then revamp it with graphics to make it look nice. Obviously the author is no artist, but this only goes to show that literally anyone, whatever their skills, can use AMOS to create the programs they want to use. Although both the *Ping-Pong* and *Tetrix* programs were sent directly to me, the PD versions of them should be in the AMOS library by the time your read this.

Anyway as I said before a few interesting developments on the licenseware scene, but none I can talk about this month, I'm afraid. See me next time for the latest news.

KEVIN HALL RIP

I can't leave without mentioning that Kevin Hall, AMOS expert and columnist was tragically killed on his motorcycle on the 7th of January. Kev was a keen AMOSer, and very much "one of the lads" on CIX. He ran the AMOS conference on CIX and also wrote the J'AMOS column in Jeff Walker's JAM magazine. He'll be sorely missed. I think every AMOS user will join me in conveying our condolences to his family. Bye Kev, and thanks for everything. AS

SHOPPING LIST

AMOS
Can be obtained from your local stockist or from:
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Europa House, Adlington Park
Macclesfield
SK10 4(P
☎ 0625 859333

AMOS PD
Software and licenseware like Sprite X and CText can be obtained from:
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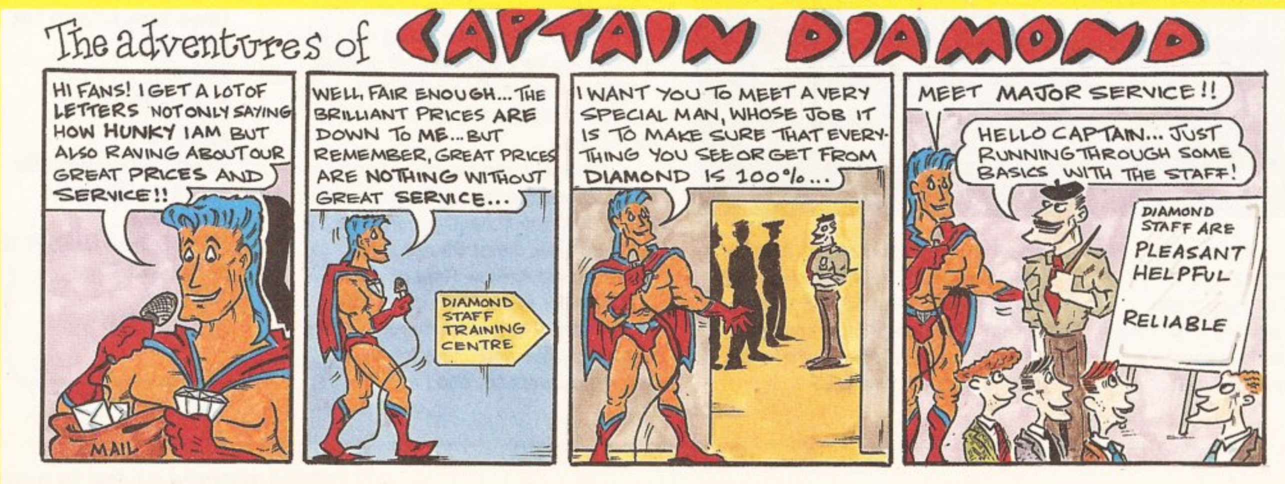
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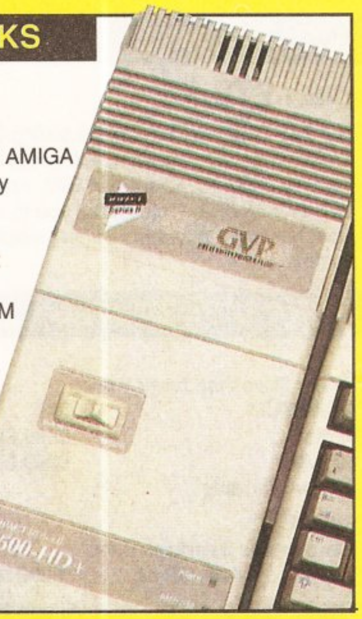
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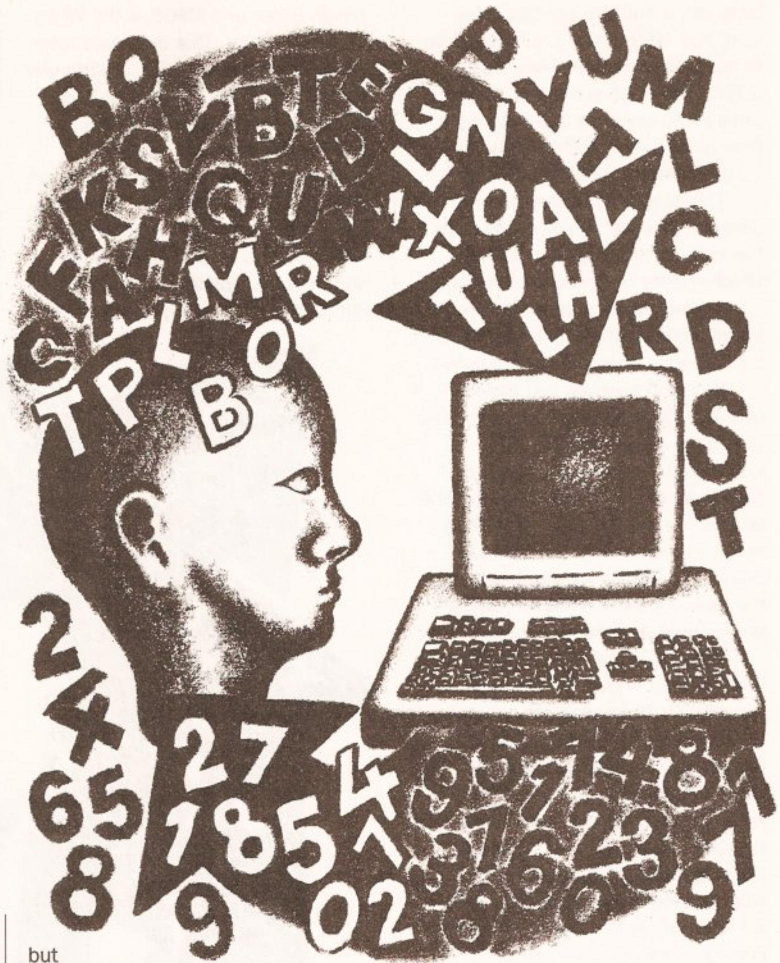
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You too can program

Don't sit there, staring at the latest demo wondering 'how on earth did they do that?' You can do it too! Read on and learn, as Cliff Ramshaw demystifies the world of computer programming



Having read last month's column, you may well be wondering what all the fuss is about. After all, if programs can do nothing more than accept input, do a few simple calculations and produce output, there's not much point to them: a calculator would be more useful.

But programs are more versatile than this, and one of the things that makes them so is the idea of the loop.

LOOP BACK IN ANGER

A loop is the way in which a programmer instructs the computer to execute the same section of a program more than once. The reason why this is useful is as follows: computers are fast; they can perform calculations far faster than the average human. Nevertheless, if they are only going to perform one calculation, it would probably be quicker to do so by hand than it would be to write, test and run a computer program to do it. However, if there are lots of similar calculations to be performed, things start to look a little different.

Imagine that you need to convert a temperature reading from Centigrade to Fahrenheit. If you only had one reading to convert, you'd reach for your pen and paper (or calculator if you were sensible) and do a quick sum. (Take the temperature in Centigrade, multiply it by 9, divide by 5 and add 32 to the result.) If, on the other hand, you were processing the data from a scientific experiment (as we all do from time to time), and you had several hundred readings, this could get a bit tedious.

The actual process of conversion is the same for each reading. The only things that change are the values in Centigrade and the values in Fahrenheit. A short segment, in AMOS, to do the conversion would look like this:

```
FAHR#=CENT#*9.0/5.0+32.0
```

(Remember that for most other Basics the hash signs are not needed at the end of the variable names – they just tell AMOS that we want the variables to store numbers with decimal points). Note that, whatever the value held in the variable CENT, the code to find the value of FAHR is the same. In other words, this section of code could be re-used for every item of data that has to be converted. What we need is some way of telling the computer to do the same thing over and over again – a looping instruction.

Needless to say, such a thing exists. In fact, several such things exist, but we'll proceed one step at a time. The most basic version is the Goto instruction. Some of you may have heard how the Goto instruction should never be used because its use is bad programming practice. Well, you can write good or bad programs with just about any selection of instructions, not just Goto. So long as you are careful not to use Gotos to loop all over the place, creating horrible, spaghetti messes, you should be OK.

When a computer executes a program, it normally takes each line in turn, starting from the top and working towards the bottom, and does what the instruction on each line tells it to do. The Goto instruction tells the computer to start executing a statement on a different line, to break the linear sequence.

Every Goto statement is followed by something called a label. A label is similar to a variable name, except it doesn't refer to a value, but a place within the program. For a label to be of use, it must appear not only immediately after a Goto statement but also elsewhere in the program, followed by a colon (this is just to avoid confusion and let the Basic package know that it is in fact a label and not something else). There's a classic program that impish youngsters (not me, I assure you) used to type into display computers to confuse the sales assistants:

```
BEGIN:
Print "Hello"
Goto BEGIN
```

When the computer first sees the label (called BEGIN in this example) it ignores it. It comes to the next line, which tells it to print out the word 'hello' to the screen. This it does. Then the Goto statement tells it to jump to the area of the program labelled BEGIN. It looks through the program and finds BEGIN at the very beginning. It then continues to execute the instructions from BEGIN onwards. The end result is a stream of hellos scrolling up the screen.

FAHRENHEIT 2

We can now take this handy little statement and apply it, along with an Input and a Print, to our segment of code to convert from Centigrade to Fahrenheit. Here's the result:

```
BEGIN:
Input "Enter degrees
    Centigrade";CENT#
FAHR#=CENT#*9.0/5.0+32.0
Print "Degrees Fahrenheit ↲
is";FAHR#
Goto BEGIN
```

The observant among you, or those who've typed the program in, may have noticed a slight flaw in the above program: it doesn't stop. This is known as a non-terminating algorithm. Since you can always switch the machine off, it's not a horrendous problem, but neither is the situation entirely satisfactory. Fear not: there are several ways to stop your loops going around forever.

THE FOREVER WAR

One of the simpler methods to avoid infinite repetition is to empty something known as a 'dummy value'. A dummy value is one which would never occur during a program's normal use, but is entered instead by the user (not the programmer) to instruct a program to stop. The actual value of the dummy value is decided by the programmer, and included as part of the program. What the program has to do is test to see whether a value it has been given by the user is this dummy value, or, whether it is a normal value on which it is should operate.

In the temperature conversion

program, a suitable dummy value would be -999 (since it's impossible to have temperatures less than -237C). We need some way for the program to check to see if its input (the value held in CENT) is the same as this number, and if so to stop.

This brings us to the area of decision making, which, aside from the loop, is the programming tool which makes computers so versatile. We'll cover decision making in more detail next month; in the meantime the following should get you started.

Before a program can make a decision, it must ask a question. The questions must have yes or no responses. Is this number bigger than that one? Is this word the same as that? Is this number other than zero? – these are all permissible questions. The exact way in which the questions are phrased depends on the programming language used.

The actual question of a decision statement is known as the 'condition'. The answer to condition is always either yes or no, or, in computing terminology, 'true' or 'false'. A program can do slightly more than check whether a particular number equals another – after all, the programmer would know this when writing the program so there would be no point. The advantage comes when variables are used, since these may hold any number.

Once an answer to the condition has been found, a branch occurs. The program can then do one of two things, depending on the answer. Here's the temperature conversion program, but with a check for a dummy value:

```
BEGIN:
Input "Enter degrees ↲
Centigrade";CENT#
If CENT#=-999 Then Stop
FAHR#=CENT#*9.0/5.0+32.0
Print "Degrees Fahrenheit ↲
is";FAHR#
Goto BEGIN
```

In this case, depending on the outcome of the decision the program either stops completely or it carries on as normal – exactly what we required for our loop. Instead of stopping, it is also possible to make the program do something entirely different, but we'll go into this in more detail later.

OPTIONS

There are several other ways of achieving the same effect. Most modern basics provide specialised statements for handling loops of this sort. Most programmers favour these statements because it makes their code easier to read; but remember any loop structure can be created with the Goto and If statements.

One structure supported by both Amiga Basic and AMOS is the While Wend structure. This creates a loop which is executed WHILE a particular condition is true. As soon as it is found to be false, the program finishes the loop and continues executing from after the Wend (short for While End) statement. Note that the If statement is no longer needed – it is implied as part of the While statement. Using While/Wend, the above program can be re-written as:



```
CENT#=0.0
While CENT#<>-999
Input "Enter degrees ↲
Centigrade";CENT#
FAHR#=CENT#*9.0/5.0+32.0
Print "Degrees Fahrenheit ↲
is";FAHR#
Wend
```

The first thing to notice is that the condition comes at the beginning of the loop. This means that the rest of the loop will not be executed if the answer to the question implied by the condition is false. You're probably wondering exactly what the condition is. What on earth does '<>' mean? Well, the '<' symbol means 'less than'. When used by itself in a conditional, it gives the answer 'true' if the number to its left is smaller than the number to its right, 'false' otherwise. The '>' symbol ('greater than') checks to see if the number to its left is larger than the one to the right. If *both* symbols are used, as they are here, it means 'not equal to' – it answers 'true' if the number to the left is less than or greater than the number to the right, but answers 'false' if they are both the same.

Notice that we are checking the value of CENT before it has been given one. The program's first line takes care of this by giving CENT a value of zero – it's not necessary, but it tidies up a loose end.

As the program executes, it tests to see if CENT equals -999. Since it doesn't, execution continues as before, with the user being asked for a temperature in Centigrade and being given a result in Fahrenheit. Finally, the Wend statement is reached. This instructs the computer to go back and start executing from the Wend statement. Once again the condition is tested – does CENT equal -999? Sooner or later, once the user has finished with the program, CENT will equal -999 and the loop will end. Execution will continue from after the Wend statement. In this example, there is no more code so the program stops.

If you try this program you'll notice an irritating feature – when you input the value -999 the program calculates a Fahrenheit value for it before stopping, even though this value makes no sense. This is because CENT is not checked against the dummy value until *after* it has been both input and converted into Fahrenheit, when the top of the loop is reached again. For this particular problem, the use of Ifs and Gotos provides a neater solution.

Another method, not needing dummy values, would be to decide in advance how many items of data were to be processed and to set up a loop to execute that number of times. This can be achieved with Basic's For/Next statements.

These are a little different from the loops we've looked at so far; an extra variable is used as a counter. The first part of the loop has to set this counter to an initial value and to say what its final value should be:

```
For I=1 To 10
```

This sets up a loop to be executed ten times. As with all loops, the For/Next loop must have an ending:

```
{For I=1 To 10
Print "Hello"
Next I
```

The above segment of code would print out the message 'Hello' ten times. The first time through, the variable I is set to a value of 1. Then the code within the loop is executed. Once the Next statement is reached, the value of I is increased by one. The computer then checks to see if I has gone over the limit set in the For statement (10). If it hasn't, the program continues executing from the statement just after the For statement; if it has, execution continues from after the Next statement – here the program stops.

You can see the value of I changing throughout the loop here:

```
For I=1 To 10
Print I
Next I
```

If you put a final 'Print I' statement at the very end of the program, you'll notice that the last value it has is 11.

During the final go through the loop, I has a value of 10. Once the Next statement is executed, 1 is added to I (making it 11) and I is then checked to see if it is greater than 10. It is, so the loop finishes and I is left with a value of 11.

It's not necessary to have the loop counting from 1 to 10. It's possible to give I a start value of 50:

```
For I=50 To 59
Print I
Next I
```

Nor is it necessary to count in steps of 1. A handy addition to the For statement enables the programmer to set any step size required. The additional word to be used is 'Step':

```
For I=0 To 100 Step 10
Print I
Next I
```

It's possible to count backwards by giving a negative Step value – the Step value is the number added to the loop ('control') variable when the Next statement is executed. If there is no Step statement, the computer assumes that the Step value is 1.

All we initially wanted to do was execute a loop a set number of times. For this, there's no need to get involved with Step values, nor a need to start our For loop with any value other than 1. However, there are times when these features can come in useful. Read next month's article to uncover the mystery of arrays and their connection with the For/Next loop. AS

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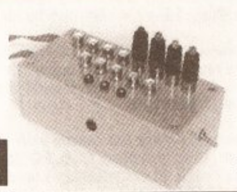
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Pennine Amiga Club 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong ☎ 0535 609263.

Public Domain User Group Swaps PD between members, provides advice and reviews of PD. Basic membership free, advanced £3 per year for newsletters and price reductions. SAE to 12 Oxford Road, Guildford, Surrey GU1 3RP.

Slim Agnus 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Meet last Thursday of month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

Software Exchange Service 13 Bournville Lane, Stirchley, Birmingham, West Midlands B30 2JY. Offers a forum for exchanging old, unwanted games for a small price. Contact Michael Pun ☎ 021-459 7576.

Solent ICPUG Meets at GEC Aerospace Sports and Social Club, Titchfield, Hants, first Tuesday of the month at 7.30. Contact Anthony Dimmer ☎ 0705 254969.

Southampton Amiga Nutters club anything andf everything to do with the Amiga. SAE for more info to D collins, 6 Bentley Green, Harefield, Southampton SO2 5GB

South West ICPUG Meets second Sunday of the month at Queens Arms Hotel, Charmouth, Dorset, at 10am. Bring your computers. Some talks. ☎ P Miles 0297 60339.

Stevenage ICPUG Meets at Hertford Road Community Centre, Stevenage, last Friday of the month at 7.30pm. Contact Brian Grainger ☎ 0438 727925.

Warpdrive (friends of Amiga) Amiga help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 a year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB ☎ 0302 859715

Watford ICPUG Long-standing club with friendly atmosphere. Meets third Wednesday of the month, 7.30pm St Thomas Church Hall, Watford. Membership £15. Contact Mark Pryor ☎ 0442 864234.

WCSPSA! Help available. PD disk of your choice and newsletter every month. PD at £1. Membership fee £25. For information contact A Jamieson ☎ 0749 677609

West Riding ICPUG Contact Kevin Morton ☎ 0532 537318.

Wigan ICPUG ☎ B Caswell 0942 213402.

Wrexham District Computer Club PD, library of books, equipment loan. 10p to join, plus 50p to get in. Held in Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU.

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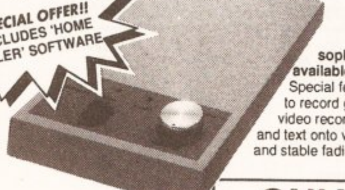
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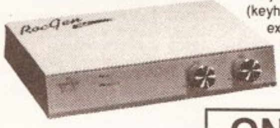
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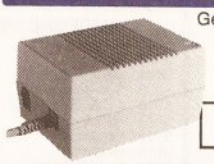
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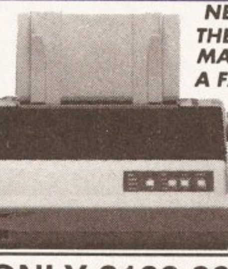
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Put an end to MIDI mayhem

Paul Overaa's MIDI trail continues with discussions on SYSEX messages, implementation charts, and things that go bump in the night...



Descriptions of the various MIDI message layouts may seem far removed from the world of real music but the fact is that a bit of 'inner MIDI knowledge' will help you appreciate the purpose of some of the facilities available on your own MIDI gear.

It can also help when choosing new equipment because technical summaries are provided in the manuals of almost all MIDI equipment. Before I look at these issues however I want to deal with a special class of MIDI messages which we didn't have space to deal with last month, MIDI's System Exclusive (SYSEX) messages...

IT'S EXCLUSIVE

Despite the acceptance of the basic categories of MIDI message it was recognised that most equipment manufacturers would still need some means of providing their own specialised, control data. The MIDI standard steering committee came up with an excellent solution – a message that could be easily recognised but which could still contain absolutely anything that any manufacturer might require.

How was it done? The basic idea is simple – with a SYSEX message it is only the outside of the information packet, the shell, which is fixed. The layout of the internal information, the real data, is left to the organisation creating the message.

As far as the outer shell of the SYSEX message is concerned the format looks like Table 1.

Table 1: The outer shell of the SYSEX message

F7 hex	ID-byte	(any number of data-bytes)	F0 hex
↑	↑	↑	↑
SYSEX status byte	Manufacturers ID	Real data	End of message byte (called the EOX terminator)

Any manufacturer who wants to implement specialist functions, ie functions which the basic MIDI messages were not designed to handle, can therefore do it very easily. In recent years there has been an increasing trend towards implementing all sorts of voice modification and control functions and, in fact, many pieces of equipment now offer almost full SYSEX message remote-control.

Control of synthesizer voice uploading and downloading was an obvious use of SYSEX messages and in the first instalment you may remember that I mentioned that synthesizer voice programming could be a time consuming affair. To be honest I was talking primarily about voice programming using the synthesizer's front-panel controls but nowadays this is not the only approach – it is also possible to edit the voices of many synthesizers using computer programs which provide easy-to-use graphical interfaces (which on the Amiga means programs based on Intuition gadgets, menus, proportional sliders etc). These programs, known as Patch editors, are now becoming quite sophisticated and almost all provide both editing and general voice-library load/save facilities.

PATCH EDITORS

It's all done with SYSEX messages. When you ask a patch editor program to upload a voice from a synthesizer it will send the synthesizer a dump request SYSEX message. If all goes well the synthesizer will respond by sending back the data using another SYSEX message.

You may touch a slider on the patch editor's screen and hear a change in the voice – the patch editor detected the slider change, trans-mitted another SYSEX message, and that (when received by the synth) produced the voice change. It is SYSEX messages which allow patch editors to perform their magic and of course the possibilities for other types of equipment control are endless!

Manufacturers should provide details of the formats of their system exclusive messages. In recent years, incidentally, a number of universal control SYSEX messages have been added to the MIDI standard and there is even a special SYSEX message ID (7D hex) which is reserved for non-commercial applications (schools, research, etc).

If you want specific SYSEX examples then look in your own equipment manuals (be warned though – the descriptions can seem complicated at first, because they invariably use hexadecimal numbers or bit-orientated descriptions when describing the layout of the data). Learning about your equipment's SYSEX control facilities comes down to finding the necessary details in the MIDI equipment manuals and learning how to interpret those details.

AND NOW FOR SOMETHING COMPLETELY DIFFERENT...

During this introductory series I've talked about buying synthesizers and explained a little of what they can do. It should have become apparent that synthesizers, and all other types of MIDI equipment come to that, can vary enormously in the facilities they provide. I'm not just talking about sound quality and construction, which obviously tend to improve as the price of the instrument increases, I'm talking about the capabilities that various instruments have for sending, receiving and understanding classes of MIDI messages which have been defined.

Strange as it may seem the MIDI standard does not specify exactly what transmission/reception facilities particular pieces of equipment should have – such things are left up to the manufacturer! Because of this it helps, before you purchase a piece of equipment, to know which MIDI functions are supported and which are not.

The 'MIDI Implementation Chart'

is a way of presenting this information in a concise, and standardised form. (You will find these charts in the manuals of most MIDI equipment on the market, so it is worthwhile learning how to understand them).

A MIDI implementation chart is a standardised table which details the MIDI function names, indicates the transmission and reception characteristics of the equipment, and provides additional remarks which help in the chart interpretation. The basic layout, with some of the fields labelled to help with the explanations, is shown in figure 1...

CHART INTERPRETATION

At the top of the chart there are details of the type of product, the product model, and the preparation date and version number. Following this the chart divides into four columns (line label A) with the first column providing the names of the various classes of MIDI messages.

The data in the next column shows the transmission characteristics of the unit (ie it tells you the types of messages which the unit can send to other units). The next does the reverse – it shows which MIDI messages can be understood by the equipment. The column on the far right is used for general remarks and additional technical notes.

Once you've an idea of what the various classes of MIDI messages are used for you'll find that most of the data provided in the four implementation chart columns will be self-explanatory. For the moment here are a few notes to help...

MIDI CLASSIFICATION

Field B holds the default MIDI channel number. If this can be 'memorized' (ie stored when the unit is switched off), this will be shown in the remarks column. Field C shows whether it is possible to change the basic channel number of the equipment and field D specifies the default MIDI mode, ie the 'power up' mode state. Field E identifies the mode messages which can be sent and understood by the equipment with the next line, field F, identifying the mode selected if the unit receives a mode message that it cannot understand).

The range of MIDI note numbers which can be transmitted and received is shown in field G. Often the reception range is wider than the range of notes which can be played by the instrument. What happens is that notes at the extremes are transposed up or down until they fall within the range that the unit can cope with. (Entry H shows the pitch range of the notes that will sound in terms of the MIDI note numbers).

Touch response information, ie velocity data, is shown in field I. Here, you should remember that just because a synthesizer does not have a touch-sensitive keyboard (and hence cannot transmit key pressure related velocity data) it does not necessarily mean that the synth cannot understand such data when it is provided from another source. You will, in fact, find that most 'non-touch-sensitive keyboard' units are able to use incoming velocity information. Field J, incidentally is used to provide details of a unit's 'Note Off' velocity characteristics.

In addition to note-on/note-off velocity data many touch-sensitive keyboards will be able to transmit aftertouch information. Fields K and L provide the details. Again you'll find 'non-touch-sensitive' synth units which are able to use aftertouch messages sent from another source.

Field M tells you whether pitch bend information can be transmitted or recognized and immediately after this you'll find a table (shown as field N in figure 1) which gives controller numbers and their designated effects. If program change messages can be sent or recognized, this will be indicated in the appropriate columns of fields O and P. Field Q provides summary details of SYSEX capabilities – for full SYSEX details you will need to delve into the appropriate sections of the main manual.

The next three fields (R, S and T) show whether song pointer messages can be transmitted or recognized, whether song select messages can be sent or recognized, or if the unit can send or respond to a tune request. In all cases if a facility is supported, you'll find 'yes' entries in the appropriate columns.

Fields U and V tell you about any real-time message capabilities. It'll show whether MIDI timing clock messages can be sent or recognized and whether start, continue, or stop

Figure 1

General MIDI Implementation Chart Layout

– blank columns on the right have been left for you to fill in *your* synth details

Type of Product

Model — **Chart Date/Version**

A	**MIDI Function**		**Transmitted**	**Recognized**	**Remarks**
B	Basic Channel	Default			
C		Changed			
D	Mode	Default			
E		Messages			
F		Altered			
G	Note Number				
H		True voice			
I	Velocity	Note ON			
J		Note OFF			
K	Aftertouch	Key			
L		Channel			
M	Pitchbend				
N	Control Change				
O	Program Change				
P		#True			
Q	System Ex.				
R	System Common	Song Pos Pointer			
S		Song Select			
T		Tune			
U	System RT	Clock			
V		Commands			
W	Aux Messages	Local ON/OFF			
X		All notes OFF			
Y		Active Sensing			
Z		Reset			
	Notes				

commands are transmitted or understood.

The following fields (W, X, Y and Z) show whether local ON/OFF, all notes off, active sensing or system reset messages are supported. If, for example, the 'all notes off' message is understood by the unit you'll find details in the 'recognized' column.

Lastly comes space where the manufacturer can write anything. Most use this space to provide information which assists in the interpretation of data given earlier.

That, in a nutshell, is what you'll find in a MIDI implementation chart and the good news is that the charts for *all* equipment will use this standardised form. The benefit is that not only do prospective buyers of a piece of equipment get a chance to see a summary of MIDI facilities which the equipment provides, but they get the summary in a form which makes it easy to compare different offerings. It's little wonder that, when buying new equipment, most experienced MIDI users ask to see the manual – what they do of course is turn straight to the page which gives the implementation chart, and then use that as their initial guide to the instrument!

POTENTIAL PITFALLS

Once you get into MIDI the chance of you *not* buying extra equipment, or changing some existing item, is remote. MIDI is addictive and the ease with which you can link new gear to your existing set up makes such growth tempting.

Despite the fact that most new 'toys' (expanders, extra drum machines, alternative sequencers etc), will be trouble-free there are some less-than-well-known snags that are worth mentioning...

With the early generation of drum machines, for instance, each drum had a fixed MIDI note-number and these correspondences were fixed.

Originally many hoped that an early common standard would be adopted so that Yamaha's bass drum notes would be the same as Roland, which would be the same as Casio etc. This didn't happen but the problems were eased as most professional sequencers offered drum-note remapping facilities to ease the burden of translating drum parts from one set of drum/note-number correspondences to another.

While this drum part remapping idea is fine when you only have a few songs and sequences to change, most MIDI musicians end up with song libraries containing hundreds of songs (each of which contain many different sequences). Because of the time it takes, having to sit down to change every song in such a library is an absolute nightmare.

THE BEAT GENERATION

The latest generation of drum machines, such as the Yamaha's RX8, have opted for user-assignable drum/note-number correspondences. These type of units can be configured so that the new drum/note number correspondences match the existing drum note relationships of your stored sequence data. This approach completely avoids having to edit your existing song data.

So, if this problem has now been solved why mention it? Two reasons.

Firstly there are still a large number of fixed drum/note-number units which are still available on the second hand market and while there's no doubt that these offer a cheap way of adding extra percussion facilities you have to be careful – the main danger is that some of the drum note correspondences will clash with the assignments which you've already adopted. It is an easy danger to avoid... before opting for such a unit – check the manual and the implementation-chart to see that the drum note values do not clash with anything you are using already.

The second reason I mentioned this problem is to drive home a point which will become more important as your MIDI work progresses.

MAKING THE CHANGES

When only a few dozen songs are involved, going through each sequence and making various edit changes is not that time-consuming. After a few years of arranging and collecting MIDI sequence data though your 'library' is likely to have grown to the point where these type of manual global-edit operations are no longer feasible because of the time they would take.

Problems can also appear when you change, or add, synthesizers and additional sound modules. You are bound to want many of your existing sequences to sound much the same as they did originally, so to start with voices on the new unit must be found which correspond to the voices available on the previous equipment. This will entail both finding (and possibly creating) the appropriate voices and making sure that the new voices are used!

"It is the SYSEX messages which allow patch editors to perform their magic and, of course, the possibilities for other types of equipment control are endless,"

As we've seen, voice selection is usually done via MIDI program change commands and these messages will be embedded in your sequences. If, for example, a program change 23 had selected a cello voice on your Roland HS10, then you'll need to be able to make any new unit select a equivalent voice when it receives a program change 23 command.

ALTERING PROGRAMS

One of the most important facilities on any new synthesizer units will be a user-definable program change table. This will let you assign any voice to any program change number to avoid having to edit any of your existing sequence data. In short you create or find the required voices on the new unit and set up the program change table so that program numbers, already embedded in your existing sequencer, select appropriate voices in the new unit.

SYSEX messages are a difficulty as far as sequence portability is concerned. With expander units like Yamaha's TX81Z, which has quite a sophisticated set of SYSEX control messages, it's possible to do all sorts of clever tricks, eg create control sequences which modify the program change table just prior to the start of the real music sequence (so that an alternative set of voices are made available).

The facilities are brilliant... until the time comes when you change expanders and realise that all your clever SYSEX stuff is going to have to be completely re-written. My advice? Experiment and learn about SYSEX messages but do keep in the back of your mind the pitfalls of embedding this type of data in your sequences.

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SYSEX – The specialised data which is transmitted via MIDI containing information which can only be understood by the make and model of instrument to which it is addressed.

Real time – Data is altered as it occurs rather than when it is residing in the memory of the computer.

MIDI file format – A standard file format which enables MIDI data to be loaded from one program to another.

MIDI – Musical Instrument Digital Interface.

KEEP IT UNDER CONTROL

MIDI Controllers are another area to watch for: problems are minimised by sticking to controllers which have standard usage and by opting for new units which provide user-assignable controller functions.

There's a good chance that more budget priced MIDI equipment will include assignable controllers as the trend for increased programmability grows. Take a look at the implementation sheet *before you buy* – check that none of the controller messages present in your sequences will cause problems with the new equipment.

Most sequencers will let you re-assign embedded controller numbers etc, but ideally you should aim to avoid placing yourself in a position where it becomes necessary to edit/remap controller numbers in all of your existing sequences.

Many of these troubles can be avoided by advance planning but: before you buy new (or second hand) equipment check the implementation sheets... looking carefully for potential areas of incompatibility with the information you've built up during your MIDI lifetime. Look for flexibility in the areas of program change tables and MIDI controller assignability, and identify controller number conflicts before you commit yourself to a new MIDI unit.

Above all... avoid unnecessary dependence on SYSEX control messages because they are equipment specific and will cause serious portability problems if embedded in sequence data.

OK so the last paragraph may sound like the MIDI equivalent of Desiderata but this comes from finding things out the hard way – I've shifted hundreds of songs across to new sequencers and have used song arrangements with a wide range of MIDI synthesizers, expanders, drum machines and effects units. The one thing that has been driven home to me is this... the key issue in such transfers is to find out how to avoid having to undertake any major editing of the existing sequence data!

Last of all in this parade of doom and gloom, which you should note

continued on page 127

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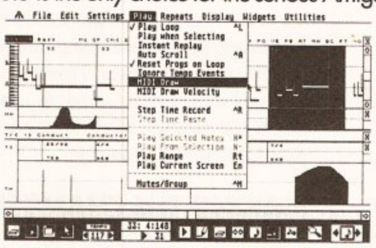
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ASJAN

continued from page 127

but keep in perspective, comes the big one – changing sequencers. It's worth mentioning some non-Amiga material here because you may have already been involved with sequencing before hitting the Amiga scene. If you change from a dedicated sequencer, such as the Alesis MMT-8, to a computer/software based sequencer package like an Atari ST running Steinburg's Pro 24 or an Amiga running Dr T's KCS, then the safest way of moving your sequencer files is to do it in real-time. Connect the sequencers together and play one while you record with the other. Don't forget that the sequencer which you're recording into should be set so that it is uses the MIDI clock messages, not any internal clock, otherwise you'll loose all of your bar definitions. This method of direct linking is simple to do, and even though it can take time, it has one over-riding advantage – it always works!

If you've already got a computer based sequencer but are moving to an Amiga sequencer then there are alternative possibilities. If the file formats of the two sequencers are compatible it may be possible (via a serial comms package or self written software) to transmit the sequencer files from one machine to the other.

Another alternative for computer based sequencer users is to use Standard MIDI Files. The idea is that a common file format has been defined and many sequencer packages offer program options (or separate utilities) which allow users to translate their files into a format which other sequencer programs can read. Nowadays many computers can read and write more than one type of disk format and this has eased most file transfer problems.

Although designed to make sequencer data portable, an interesting offshoot has emerged – the fact that it is now possible to buy complete songs (which have been played by professional musicians) in MIDI file form. Zone Distribution, for instance, (☎ 081 766 6656) offer the very comprehensive 'Trycho Tunes' MIDI File range.

Today a great many software packages provide some level of MIDI file support and more and more users are beginning to realize the benefits of storing sequences in this way. If you want t know a little more about the 'internal contents' of these files see the box opposite...

AT THE END OF THE DAY

The MIDI trail, like most things, is open ended and there is almost no limit to what you can spend, learn and do. For top-end users there is, as well as heavyweight sequencers such as Dr T's KCS and Blue Ribbon Soundworks' *Bars&Pipes*, a growing variety of notation, composition and patch/librarian MIDI software (check out some of the Dr T's offerings such the *Copyist* and *XOR*). The software-reliability problems, which plagued many of the Amiga's early MIDI offerings, have long since gone and MIDI-wise the Amiga is now going from strength to strength.

Despite the electronic complexity MIDI gear is also reliable – when problems do occur it is usually because of silly things such as wrong connections, faulty leads, inadvertent alteration of a unit's internal parameters, and so on.

THE LAST RESORT

Fault finding is something which comes with practice but there are a few things which can make life easier. It is for instance useful if MIDI interfaces, and other items of equipment, have led indicators which flash when MIDI data is being received. When you need additional help then there are a number of possibilities: Studiomaster (☎ 0582-494341) market a MIDI analyser called the MA36 which can be used to check the types of messages being sent down a MIDI line. Forefront Technology (☎ 0376-83920) offer a programmable MIDI message transmitter unit called the FT3 Plus Patch commander which can be used to send a variety of MIDI message types.

The DataPak MIDI Toolkit program, (☎ 0702-542229) is another useful diagnostic utility. Strangely enough most of the problems that I encounter (and nowadays these are usually other peoples' MIDI nightmares) are solved not by using loads of diagnostic tools, but by spending half an hour reading the appropriate equipment manuals (there is a moral here somewhere)!

Most of the time though you are not going to encounter any serious problems and you certainly should *not* have to spend large amounts of your MIDI-lifetime engaged in fault-finding. Playing music, and learning about MIDI, should be enjoyable and perhaps the best way to keep it so is to take things slowly. Read reviews, books on MIDI (and series like this) and try to learn as much as possible. *But*... don't feel that you must learn about hex numbers or SYSEX messages right from the start – just concentrate on the things that *you* feel are useful to you at the present time (you'll know, incidentally, when you've got the balance right because the headaches will stop).

Well that's it as far as this introductory series goes. I did say I'd try to explain what MIDI was – until next month keep going with this thought:

MIDI, is the best thing that has ever happened to the music world! AS

MIDI Files

To be honest you are unlikely to ever need to know in great detail how information is stored inside a standard MIDI file, but a rough appreciation of the layout is useful.

A MIDI File, just like any other computer file consists basically of a series of bytes. The MIDI file standard specifies the interpretation and arrangement of those bytes. At the highest level MIDI Files consist of identifiable blocks of data called 'chunks'. Each chunk consists of a 4 character identifier followed by a 32-bit number which specifies the byte-length of the data held in the chunk, ie all chunks adopt this type of arrangement...

Chunk	**<chunk-identifier>**	**<chunk-size>**	**<actual chunk data>**
	4 Bytes	**4 Bytes**	**chunk-size bytes**

Only two types of chunks are currently defined: header chunks which have a 'MThd' identification label, and track chunks which have a 'MTrk' internal label. These two chunk types can actually be arranged in three ways and it is this which leads to the three types of MIDI files being defined...

Format 0 type files, which contain a header chunk followed by a single track chunk, are the simplest (and most portable) of all the MIDI file arrangements. They're used primarily for storing sequence and song data as a single stream of events.

The other two types have been devised for specific multi-track/multi-sequence uses: Format 1 type files allow multiple parallel track sequences to be handled (these files will contain a header chunk followed by a set of separate track chunks). Format 2 files allow collections of independent sequences to be stored – a sequencer might save a number of individual verse/chorus sequences as a single format 2 type MIDI file.

Irrespective of the track chunk arrangement the layout of the track chunks will follow a clearly defined pattern. MIDI File events all start with a time value (ie they are time-stamped) and three distinct categories of event have been defined: MIDI events, SYSEX events, and Meta events. MIDI events are the easiest to explain – they can be any MIDI channel message.

SYSEX Events are *not* identical to ordinary MIDI SYSEX events – in fact two distinct forms can exist within a MIDI file. The basic information packet includes an additional byte-count field which gives the length of the real data...

SYSEX Event1 <F0 hex> <length> <data bytes>

If the SYSEX message is sent as a single packet then the last data byte should be the conventional EOX (F7 hex) SYSEX terminator. This may appear to be unnecessary since a SYSEX message length field is also included. In the original MIDI File standard it was indeed unnecessary and the terminal F7 byte was not required.

The reason that the F7 terminator has been re-introduced is that a new MIDI file SYSEX message has been devised which allows large SYSEX messages to be broken up into time-stamped packets.

The new message actually starts with the F7 hex terminator and takes this general form...

SYSEX Event2 <F7 hex> <length> <data bytes>

If a program wants to split a SYSEX message into a number of separate packets it does it by using the F0 form for the first data packet, and F7 forms for any subsequent packets. (The last byte of the last packet of information contains a 'real' terminal EOX byte).

The third class of events that the MIDI File standard supports are non-MIDI events and these are known as Meta events. All of these start with an FF hex character as the primary meta-event identifier and immediately after this comes a meta event 'type' field, a byte count value, and finally the data itself...

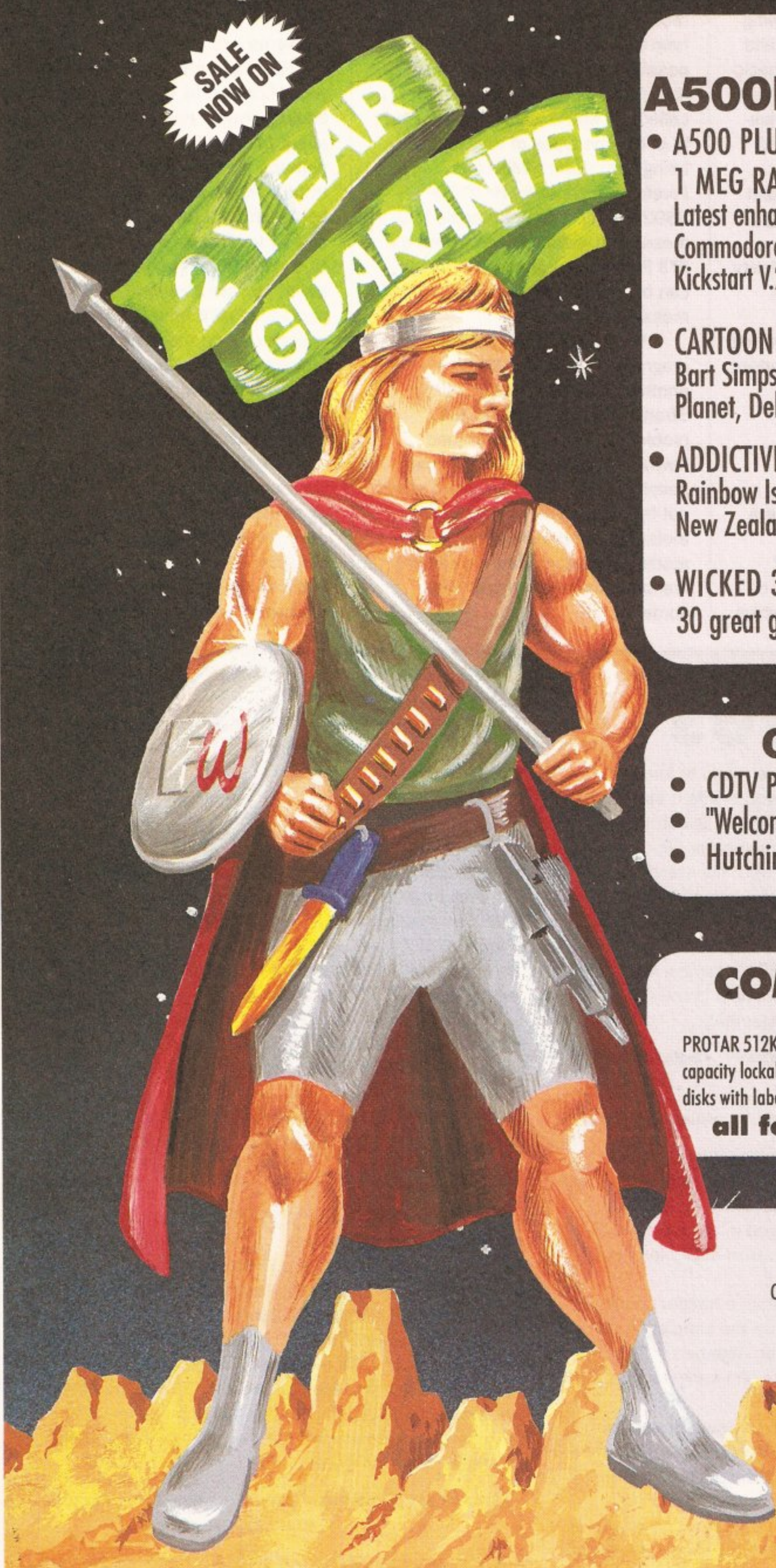
Meta Event <FF hex> <meta-event type> <length> <data bytes>

In a sense the type field byte performs the same job as a MIDI status byte but it is of course being used to classify a meta event type not a MIDI message type. Meta events have been defined for storing copyright info, general text, song lyrics and many other items.

That's as much as I'm going to mention as far as the internal layout of MIDI files go – it may be all very interesting but it is far removed from the areas that most MIDI users are involved with or interested in and, after all, this series did not intend to cover MIDI programming as

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Keep it on record

Superbase Personal 2 is probably still the best database system around – Mark Smiddy shows you how to get more from it and answers some familiar questions

Databases have a wealth of applications. In short, they are a place where information can be stored, retrievedand even cross-referenced. So, if there's something you need to keep tabs on, what better way than with a database...

AT FIRST BASE

The object of this article is to demonstrate the use of *Superbase Personal 2* in constructing a database suitable for a record collection. In part two next month, I'll be applying the same techniques to books and videos. All these databases have something in common: none of them are practical for flat-file database programs (– a flat-file database being one in which each record is an individual entity). Although this feature has been developed on *Personal 2*, most of the examples will work just as well on the original, and, of course, *Superbase Professional 4*.

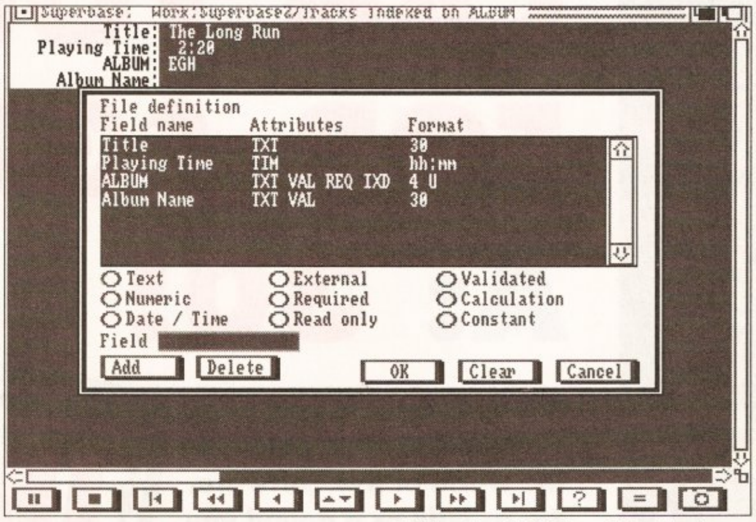
I can imagine a lot of database users quaking in their boots on reading that and thinking: "That's what I use mine for" while reaching for the pen to write in and complain. It's true that almost any information can be stored in a flat-file database – but the data cannot be easily cross-referenced to information in other databases; and that's what relational databases are about.

To take a simple example, think of a database for storing information on all the books in a library. Although every book is unique, the same authors, publishers and subjects occur repeatedly. Furthermore, many books may have more than one author. This leaves flat-file databases struggling. For instance: how many author fields should there be and how much information should be held on the publisher? In this scenario, much redundant data is held in every record allowing room for human error such as spelling mistakes. Also, if one of the details (such as a publisher's address) were to change, altering all the necessary records would be nightmarish.

GOOD RELATIONS

Relational databases offer a very simple solution which is this... Two or more database files can be linked by single fields. In other words, a code in many records in "Database A" could refer to just a code in one record in Database B – it's called a "many to one" relationship. Applying this to our library example: Database A is the list of books and each record contains a non-unique code for the book's publisher. Database B on the other hand is the list of publishers. A third, Database C, could be a list of authors (remember there can be more than one author for a book).

It's important to note that as Database A's data is dependant, changes to Database B or C are automatically global and simple to make. By reversing the situation we can group the records "one to many" and search for "books by author" using the "one" author record and listing the "many" books they have written. While *Superbase* is capable of these relationships, it's tricky to use. Several readers have commented on this, and this article was written with those very people in mind.



Editing the definition of the Track database with *Superbase Personal 2*. This will store all the tracks on each album in your collection

MUSICAL EXAMPLES

Let's start off with a simple example (the record collection) and build up from there. The idea is to produce a database which holds information on all the records in your collection. We'll begin by only storing the titles of each album and the media type: CD, LP or compact cassette; a flat file. Then extend the idea to store the song titles of all the tracks with two relationally linked databases.

Open a new database called ALBUMS and define the following fields (noting the Type field is in Upper Case format:

Name	Attributes	Format
Title	TXT REQ IXD	30
Type	TXT REQ	2 U
Artist	TXT REQ	20

If you are unfamiliar with *Superbase*, you will note the IDX field (Type) is a normal index which is added after you click OK on the file definition box. This very simple database will allow you to enter the details of every album in your collection. The type field is a code where:

CD = Compact disk
LP = Long playing record
CC = Compact cassette

As you see, it would be very easy to mis-type those codes so we'll add a validation formula. Return to editing the file definition, select the "Type" field and click on the Validated button. The formula is thus:

BEGINNERS START HERE

BEGINNERS ***What is a database?***

Strictly speaking a database is a number of records containing many similar items: such as telephone numbers. Typical classical examples are Filofaxes, card files or the Rolodexes: things used for storing all manner of information: from names and addresses to recipes etc. The name database has been adopted by computer society to define a software package – a program – which is used for data storage and retrieval. Data stored on disk is also database – which is, of course, a typical source of confusion.

BEGINNERS ***Why do I need one?***

Databases are open ended applications. What is stored and the form in which it appears, is defined by the person using it – you. The program has the task of managing the data: searching for particular records; printing them; updating them and so on. From this definition you can gather a database could be used to: index your record collection; store the wife's favourite recipes; a Christmas card list with names and addresses – the application is defined by the data and the user's imagination. The example here is tailored for books and records; but once the techniques are mastered the sky's the limit.

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```
Type.Albums = "CD" OR ↵
Type.Albums = "LP" OR ↵
Type.Albums = "CC"
```

This can be entered quickly using the requester:

1. Click the Type field.
2. Click the "=" button.
3. Enter CD in the Value box and press Return.
4. Click the "OR" button.
5. Repeat steps 1..4 substituting LP and CC respectively for CD. Don't enter an extra OR after CC.
6. Click "OK" to enter the formula.

The file definition now looks like this:

Name	Attributes				Format	
Title	TXT		REQ	IXD	30	
Type	TXT	VAL	REQ		2	U
Artist	TXT		REQ		20	

That completes the definition for a flat file database, and you can leave it at that if you wish, there is enough scope here for a simple database of albums. However the problem was to create a database which could store details of all the tracks on each album. Using a flat-file system this would require the addition of 20 or more fields for the track names. This is inefficient because albums may have less; and each field takes up space. The answer, is to create another database which holds just the tracks on each album and link the two for reporting purposes.

One extra field is required for our existing database – a unique code which will represent each album title in the database. At its simplest CODE is defined as follows:

Name	Attributes			Format	
CODE	TXT	REQ	IXU	4	U

Note the fieldname CODE is in capital letters. This is an aide-memoire to remind you the code is a link field. Although not strictly necessary, the reason will become clear when you use the Query reporting function. Something may not be immediately apparent here – what would happen if you inadvertently add extra spaces to the contents of CODE. You might not notice – trailing spaces are difficult to spot – but they will affect the index (key) value. For a relational code index like this it's vital you get the code exactly right, but *Superbase* provides for that. Click the Calculation button and enter this formula:

```
LTRIM$ ( TRIM$ (CODE.Albums))
```

This ensures you don't add unwanted spaces, even if you do they are removed automatically. When you finish editing the formula, you will notice the "Read only" flag is set. This is required for automatic fields and must be removed for this example. (The flag is set by *Superbase* as calculated fields aren't usually edited. Automatically generating an index code for this example is possible but I don't recommend it.)

ON THE TRACKS

The second database required for this database (called Tracks) will store all the tracks on each album and it's defined as follows:

Name	Attributes				Format	
Title	TXT		REQ		30	
Time	TIM				hh:mm:ss	
ALBUM	TXT	VAL	REQ	IXD	4	U

Note the time field is not required (many producers do not supply a timing). The remainder of this definition shouldn't present problems, but the ALBUM field does require explanation. This will be the relational link between the Albums and Tracks database. Again, the field name is upper case to remind you of this fact. Links must be indexed, but note, the index is not unique, as many tracks (non-unique index) can belong to one album (unique index). The album index is unique to avoid defining the same code for two albums – and confuse the relations.

The validation formula for ALBUM is interesting because it employs a function and isn't usually found in *Superbase Personal 2* validations. Here's the validation formula:

```
LOOKUP ↵
(ALBUM.Tracks,CODE.Albums)
```



Using the lookup requester in *Superbase 2* – one of several carefully hidden features

This function searches the Albums file's CODE keys for a key which matches the one just entered in the ALBUM field. What? Put another way: when you enter a new CODE in the Albums database, *Superbase* generates a unique code which identifies that album. When you enter a code in the Tracks database, LOOKUP checks to see it ties to an existing record in the Albums database. A side effect of this is that you must enter the album records first, but it ensures every Track entered ties to an Album. The reason for using upper case for relationally linked field names should have become clear now. When your eyes scan down the list you can pick up the correct fields among all the others. Other fields may be indexed but they may not, necessarily, be used for relational links.

You may be tempted to add a calculation to this field to trim any leading a trailing spaces. Although this would be logical, it is not necessary because LOOKUP will spot

continued on page 134

JARGON BUSTING • JARGON BUSTING

Field – A blank area in a database record to hold data. Fields are usually categorised by the type of data stored in them: text, numbers, dates etc.

Index – A list of pointers. A normal index holds one pointer for every non-unique indexed record in the database. A unique index contains one value (key) for every record in the database.

Key – An index pointer. Put simply, a value calculated from a field's contents. A collection of keys is called an index.

Record – A collection of one or more fields.

Database – A collection of one or more records.

Summary of Record Collection Database Definitions

Albums:

Name	Attributes				Format	
Title	TXT		REQ	IXD	30	
Type	TXT	VAL	REQ		2	U
Artist	TXT		REQ		20	
CODE	TXT	CLC	REQ	IXU	4	U

Field "Type" validation:

```
Type.Albums = "CD" OR Type.Albums = "LP" OR Type.Albums =
"CC"
```

Field "CODE" calculation:

```
LTRIM$ ( TRIM$ (CODE.Albums))
```

Tracks:

Name	Attributes				Format	
Title	TXT		REQ		30	
Time	TIM				hh:mm:ss	
ALBUM	TXT	VAL	REQ	IXD	4	U
Album Name	TXT	CLC	RDO		30	

Field "ALBUM" validation:

```
LOOKUP (ALBUM.Tracks,CODE.Albums) ELSE REQUEST "Can't find
that album","Please select one:",20,a%,ALBUM.Tracks,
60,CODE.Albums,Title.Albums
```

Optional field "Album Name" calculation:

```
LOOKUP (ALBUM.Tracks,CODE.Albums) ? Title.ALBUM : ""
```

Final Report Query:

Fields

```
FIELD ON "Albums" NEWLINE REPLICATE ("*",79) NEWLINE
"Album:" Title.Albums, @40"Media: "Type.Albums @55"By:
"Artist.Albums" NEWLINE NEWLINE ON "Tracks"
Title.Tracks,@40"(" Time.Tracks ")"
```

Report

(not used, leave blank)

Filter

```
CODE.Albums = ALBUM.Tracks
```

Order

```
Title.Albums, Title.Tracks ASCENDING
```

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any errors since a matching key will not be available. Also, because input validation is performed before the calculation, the extra programming will have no effect.

The LOOKUP function has an another interesting side effect in that it alters a pointer to the current record in the related database, so data can be cross referenced immediately on-the-fly. The ternary operator – *Superbase Personal 2* and *Pro 4* only – can be used to demonstrate this. The example given here does give rise to redundant information because the album's name is stored in both databases – but this can be useful for casual browsing and to avoid errors. Add this field to the current definition for the Tracks database:

Name	Attributes	Format
Album Name	TXT CLC RDO	30

The calculation formula is as follows:

```
LOOKUP ↵
(ALBUM.Tracks,CODE.Albums) ?↵
 Title.ALBUM : ""
```

The ternary operator here tests the value of the key lookup and returns the value found in the Title field of the Albums database. If the relationship fails, a null string is returned. The null string would normally be an error message, but is not required here since the key has already been validated in the validation formula. This also suggests the formula could have read simply:

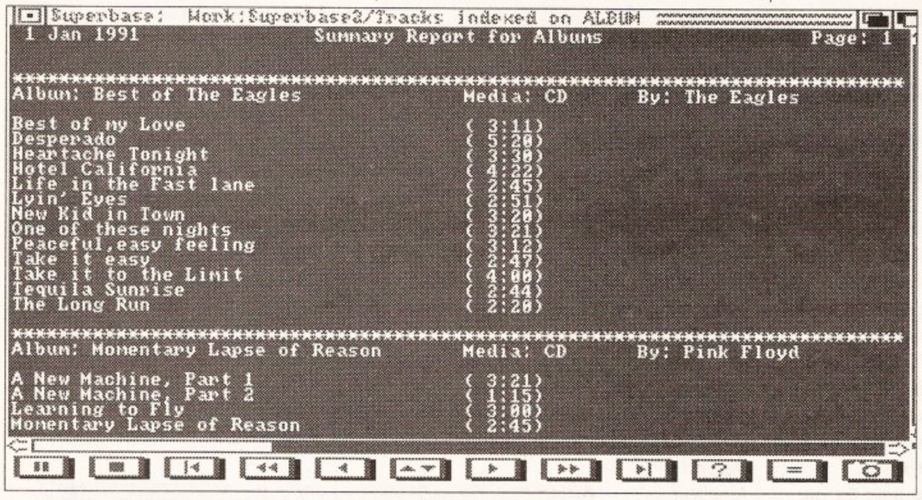
```
Title.Albums
```

which would be quite correct in this instance. Generally speaking though, it is unwise to rely on the position of the relational pointer since it can be affected by other things.

Leaving the best for last, there's something else you can do with *Superbase Personal 2* – an automatic requester. Therefore, when you mistype an ALBUM entry, rather than produce an error message, *Superbase* lists the available codes and the albums they relate to. The appropriate code can be selected by clicking it. This of is more common in *Superbase Pro 4*, but there's no reason it shouldn't be used to enhance even simple databases like this one. Enter the following validation formula into the ALBUM field of the Tracks database:

```
LOOKUP (ALBUM.Tracks,CODE. ↵
Albums) ELSE REQUEST "Can't ↵
find that album","Please ↵
select one:",20,a%, ↵
ALBUM.Tracks,60,CODE.Albums,↵
Title.Albums
```

Unfortunately, there isn't room to explain how it works this month, but try it and you'll get the idea. The number 60 represents the width of the requester. Either side of that are the two related keys. The last parameter provides the description string (the title of the album) associated with the key, CODE.



"One I prepared earlier." Query is difficult to use but is capable of some impressive results once mastered

TESTING, TESTING

Now we need sample data to test the database. You can use your existing collection to test this application, but I've supplied some example data to get you started. The times are rather arbitrary – just make some up if you want to process them. Remember though, you must supply the hours, ie: 0:2:52. In any case, you will need at least three albums worth of data entered to get the feel of how this database works. Open the Query requester and enter the following Fields line. (You will find it easier to enter this by clicking the Fields gadget and enter this from the requester.):

```
Title.Albums,Title.Tracks,↵
ALBUM.Tracks, "->"CODE.Albums
```

Now click OK and watch as a completely useless list of data scrolls by! Note that for every album in the Album database the complete list of tracks in the Tracks database scrolls by. We need to tie the two lists together by defining a relational link between the two databases. Click on the Filter gadget and enter this:

```
CODE.Albums = ALBUM.Tracks
```

This is Superbase's way of defining a relational link. It forces the program to match CODE keys in the Albums database to ALBUM keys in the Tracks database – and output any matching records. Don't worry if that isn't immediately clear, click OK and you'll see the idea in action – especially down the two columns on the right which show the codes.

It would be more useful to split the listing by grouping all the songs with each album; and inserting a break to show where a new listing starts. Add this to the Report line:

```
GROUP Title.Albums
```

and click OK to see the result. Now add some order to the listing by entering this in the Order box:

```
Title.Albums, Title.Tracks ↵
ASCENDING
```

This sorts all the albums by name, and sorts the names of the tracks in the correct groups from A to Z going down the screen. Sorting order can be very important in queries but it is not a requirement here.

ALL FOR ONE

Now we have the data definitions linked together and sorted, another malady becomes apparent: every record in the Tracks database is printed with the relevant album's name from the Albums database. Although this is not a major concern, it should be corrected. *Superbase*'s ON operator fixes that – but it should be used with caution. Try this:

```
ON "Music"Title.Albums, ON ↵
"Tracks"Title.Songs,↵
Time.Tracks
```

That should produce the desired result, although the columns wrap at the wrong points. This is a feature of *Superbase* and is inherent even in the latest version. But don't despair, as they say on *Blue Peter*, "Here's one I prepared earlier":

```
FIELD ON "Albums" NEWLINE ↵
REPLICATE ("*",79) NEWLINE ↵
"Album:" Title.Albums, ↵
@40"Media: "Type.Albums ↵
@55"By: "Artist.Albums" ↵
NEWLINE NEWLINE ON "Tracks" ↵
Title.Tracks,@40"(" ↵
Time.Tracks ")"
```

Leave the report section blank for this query – which proves there's more to *Superbase* than meets the eye. I'll give a full description of how this works next month. The completed definitions for the music database are listed for quick reference, I might even upload the relevant files to CIX if someone sends me some nice mail. AS

Sample Music Data

Albums

Title	Type	Artist	CODE
Momentary Lapse of reason	CD	Pink Floyd	MLR
Tubular Bells	LP	Mike Oldfield	TB
Best of The Eagles	CC	The Eagles	BOE

Tracks

Title	Album	Title	Album
Take It Easy	BOE	Part One	TB
Peaceful, Easy Feeling	BOE	Part Two	TB
Desperado	BOE	Signs Of Life	MLR
Tequila Sunrise	BOE	Learning To Fly	MLR
Best Of My Love	BOE	The Dogs Of War	MLR
Lyin' Eyes	BOE	One Slip	MLR
Take It To The Limit	BOE	On The Turning Away	MLR
One Of These Nights	BOE	Yet Another Movie	MLR
Hotel California	BOE	Round And Around	MLR
New Kid In Town	BOE	A New Machine (1)	MLR
Life In the Fast Lane	BOE	Terminal Frost	MLR
Heartache Tonight	BOE	A New Machine (2)	MLR
The Long Run	BOE	Sorrow	MLR

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□x **AT18 TWOK-0** Anim NCC 1860 Avenger & NCC 1701-A-Enterprise. NCC 1089 Grissom.
□x **AT22 APPROACHING VESSELS** Animation, Binary Flight Wireframe landscape by T.Richter
□x **AT23 STAR TREK FLEET MANEUVER** NCC-1940 Fly over & by animation. excellent classic
□x **AT33 THE PROBE II** Animation & **BRID OF PREY** Animation from Star Trek. **KLINGONHIT**
□x **AT34 LEAVING SPACE OFFICE** Animation , **DOCKING** Animation from star trek. **ATTACK MODE** Bird of Prey Scout hip in attack mode
□x **1060 STAR TREK THE NEXT GENERATION** This game is by Terry A. Mc Intosh. v1.47 *
□x **1081 THE UTLTIMATE STAR TREK** Game by Tobias Richter. v1.0, (2 Disks)
□x **1254** Star Trek The Shoot m Up game
□ **2033 STAR TREK MEGA DEMO (2)** T.Richter presents a Mega demo of Star Trek pictures.
□x **2222 STAR TREK THE NEXT GENERATION** This is the latest quiz game based on the Next generation **(2)**
□x **SMAUG120** The Star Trek the game by Eric Gustafson US Inport reqires 1Mb and (3) disks
□ **SMAUG156** The Star Trek the game by Jimbo Barbers American version 1Mb and (2) disks
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□x **V367 STAR TREK INFORMATION** A Data base of all the original series. Very Detailed.

MEGA DEMOS

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□ **1995 KEFRENS - GUARDION DRAGON** The latest production from this great group.
□ **2028 IBB - MANGAD** This production has been voted **DEMO OF THE MONTH NOV/91** by all here at PD-Soft. Excellent Sound, music & Grpahics.
□ **2120 DMOB - ITS A LAME D-MO** That right after many of months there back with a excellent VECTOR PRODUCTION Voted **DEMO OF THE MONTH DEC/91**
□ **2137 WILDFILE** Reviewed in most of the popular magazines. Brilliant with plenty of innovative parts.
□ **2174 HYPNAUTIC HAMMER** A Fantastic fast moving Animating Mega Demo with great effects.
□x **2203 RAM-JAM - THE GROVE** An action packed Mega Demo credted by Ram-Jam. Very Good
□x **2211 TRACKRO - VECTRA** A New style Mega demo with some Great Graphics & FX. Voted **DEMO OF THE MONTH JAN/92** By all here at PD-Soft.
□x **2216 UNKNOWN TERRITORY - AXIS** A Brand new demo thats out of the world, Recomended
□x **2217 TRACKMO - REDMIX** An interactive Meda demo with fantastic Graphical effects & sound.
□ **2247 PLASTIC PASSION - UP FRONT** just one of the various excellent mega demos from this month.
□ **2250 ODYSSEY - ALCATRAZ (5)** This is another of the brilliant mega demos from this onths releases.
□ **2258 SEEING IS BELIEVING - ANARCHY** Thier back with another mega demo to rocket to the top of the charts. Recommended By PD-Soft.
□ **2259 HARDWIRED - CRIONICS (2)** The best are back & heads the charts with one of the best, may be the best mega demo to date. **DEMO OF THE MONTH FEB/92** Recommend & voted number one by PD-soft

LICENCEWARE (£3.00)

□x **L13 BOUNTY HUNTER - HIGH NOON** * Take Lucky Luke through a Graphic adventure, Excellent arcade shoot outs where you contoll the Gun. then ride your horse & take out the bad guys.
□x **L14 CLASSROOM MATHS** Educational programs for the age group 6-12. The Class room, Liftoff, Rescue, & Goal.
□x **L15 SPACE BLOB II THE CRYSTAL CAVERNS** * Excellent follow up to Space Blob travel through levels.
□x **L16 TANK BATTLE** This is a convertion of the ultimate classic game from the Atari VCS called combat. 2 Player
□ **L17 DIANETIX RED SECTOR EXTRA DISK 1 :** The IFF Converter lets you convert IFF Pictures into various formats including sprite 4, Sprite 16, Copper, ILBM, Raw Norm, Raw Blit & Outline.
□ **L18 DIANETIX RED SECTOR EXTRA DISK 2 :** This disk contains the Red Sector Vectordesigner program. yes the Red Sector version. Also contains full instrustions to use it.
□ **L19 DIANETIX RED SECTOR EXTRA DISK 3 : FONT EDITOR** Now you can create & Edit any font. Also comes with full documents & Help files.
□x **L20 AVINA BLUE** A sideways shoot em up in the scrable style. Simple but very active to play.
□x **L21 CHALLENGE OF THE MATRIX** The idea of the game is simple. Simular in style to bouncer.
□x **L22 SPECTRUM** Cross between batty & Space invaiders

DEMOS

□ **1762 TERMINATOR II SLIDE SHOW** There's some excellent pictures from the film **(2)**
□ **1867 THE KLF EXTERNAL STEREO REMIX** One of the better house music disks. Stereo
□x **2004 TECHNOTRONIC MIX (1Mb)** The Beat Factory Presents this excellent Megamix.
□x **2037 ENIGMA SADNESS 1** Another cover version of a spectacular music dance track.
□x **2086 BUZZARD ANIMATION (3)** One of the best animations of 1991. A classic and brilliant product (1.5MB)
□x **2126 FRACTALE MOUNTAINS** A Slideshow of various Fractale calculated landscapes. (2 Disks)
□x **2213 PLAY SID V2.0** The Best Commodore 64 music on the Amiga to date. On Three disks **(3)**
□x **2229 JUSTIFIED & ANCIENT (2)** The KLF & Tammy Wynette present stand by the jams remix.

GAMES SELECTION

□ **SMAUG149 MORIA** V3.0 Excellent role playing game with new improved graphics.
□ **1073 TETRIS ORIGINAL**This is the closest game to the original tetris computer game. A Classic
□x **1420 DTRIS** This is the best 2 Player Tetris game.
□x **1454 MEGA BALL** (THE BEST ARKANOID GAME,Better that any Full Price Games).
□x **1486 SOLITAIRE & SOLITAIRE ROYAL** Two very excellent & addictive card games.
□x **1561 TRITWIS** This is the best version of Tetris on the amiga with a 3 play option.
□x **1735 ASTERIODS** 'THE ORIGINAL' Another old classic. Remember that Classic.
□ **1747 LLAMATRON GAME 2001 By Jeff Minter** Brilliant stuff & Excellent production
□x **1749 SCRAMBLE** 'The Original'Remember that old classic well is now on the Amiga.The Shoot em up.
□x **1870 PATIENCE'S & DOMINOS** The famous card game, this is the best version to date.
□x **1964 AMIGA COLUMNS** Famous convertsion of the original game columns. Tetris variant
□x **1977 POM POM GUNNER** Shoot down the incoming world wor II air planes.
□x **1981 TRUCKING ON** A truck traveling adventure trading game. An excellent simulator. **(2)**
□x **1984 AIR WARRIOR** The first real flight simul-ator on the amiga with various Air planes to Fly
□ **2018 JETMAN** Another spectrum classic converted to the amiga. It's JetPak.
□x **2022 SEA LANCE** The first Silent service type sub war game within our amiga PD collection. BEST GAME OF 1991 BY AMIGA FORMAT ISSUE 30
□x **2054 ATIC ATAC** A rendition of the game from the original Spectrum computer.
□x **2161 ETHOS GAME** An excellent new role playing/ Stratery game. Load through workbench.
□x **2162 BATTLE OF BRITIAN WAR GAME** 2 Strategy war games which both need loading through Wb.
□x **2164 DUNGEON ON NADROJ** This is the best Dungeons & Dragons Public domain type game we have played in a long time. . Recommended for all.
□ **2170 NU GAME** A vertically scrolling shoot em up where you must battle through various motherships.
□ **2171 WESTLANDS** An excellent game, viewed in most Magazine with very good reviews.
□ **2173 CARD GAMES** Various card games titled Cribbage, Blue moon, King, Patience & Hearts.
□x **2177 MISSION X : RAID II** This is a shoot em up game in the style of SWIV & 1943. Very good game
□x **2178 SURVIVOR** An excellent space based adveture game in the Aliens theme. Nice colourfull graphics & recomended by all here at PD-Soft.
□x **2179 ADVENTURES IN HELL** A collection of six games, Jedi, Star trek, Atlantis, Ring & Indication.
□x **2180 SKODA CHALLENGE** An excellect 4 player hotRod game written in Amos. Simple but good fun.
□x **2185 BATTLECARS** This is one of the best PD Games on the Amiga to date, Solid 3d graphics. travel around, track down the other cars and destroy.
□x **2199 PARACHUTE JOUST** Another excellent game where you are falling down to earth. you must take the Parachute from the other player by hiting him. there an excellent graphical ending for the loosing player.
□ **2218 THE BEAST** Simular game play to the classic chess. Take your side and trap the Beast. very good.
□x **2219 NAPOLENIC WAR SIMULATOR v5.0** Excellent program sent direct by the author.
□x **2220 STRATEGIC GAMES** Eternal Rome, Lords of Hosts, In Moonshine. Excellent collecytion.
□x **2221 MIND GAMES 21** of the best Mind games to challenge your mind not your shooting games.
□ **2224 SWORD OF THE WARLOCK** A Bards tales / Eye of the Beholder adventure game packed on three disks. The best Shareware role playing game on the amiga. Excellent Adveture. **(3) 1Mb (2Drives)**
□ **2233 ROYAL BOULDERDASH** Another of the classic games based round boulderdash.
□x **2265 HOLLYWOOD QUIZ**, A nicely produced quiz game with a choice of subjects. **DOWNHILL SKIING**
□x **2270 SNAKE PIT, CHINA CHELLENGE & RUBIK**
□x **2271 CLUE** (Cluedo Game)
□x **2273 BACKGAMMON, PUSHOVER & PUZZLE PRO**
□x **2278 CARD SHARP** A very professionally present ed selection of solitaire type card games.
□x **2279 SUB ATTACK v1.0** Control the torpedoes & sink the enemy ships as they sail past. **LANDMINE,**
□x **2313 REVENGE OF THE MUTANT CAMELS By Jeff Minter** The ride of a life time with mutant camels that spit plutonium death. Excellent shoot em up.

NEW AMOS PD DISKS

□x **APD151 UNDERSTANDING AMOS** The Amos Tutorial Program Disk. A must
□ **APD329 AMOS FRUIT MACHINE II** By gary Hunt. This program is as near as possible to the type of fruit machine you can find in any snooke hall or Pub / Arcade. features include Hold, Numbers Held, Winspins, superwins, Bronze/ Silver/ gold Pots, Skill Shots, Stop a win, Cashpot, Gample & collect.
□x **APD333 AMERICAN FOOTBALL RADIO VERSION** You are a coach of London and you have 5 seasons to win the Amosbowl.
□ **APD340 KARATE WORM** By Mark Potter, various levels with jumping, Kicking & throwing Weapons, Another cute & unusual game.
□x **APD343 SAVE THE TREES** by Mark Potter, Move around the screen in your tank rolling over any body trying to chop the worlds trees down.
□x **APD347 THE JOTTER** small collection of utilities. **NOTEBOOK**, A staight forward & easy to use note booke program. **SHOPPER**, Enter prices, Quanties to build up a list, Also gives to a running total.
□ **APD350 STORY BOOK2** Is cute activity adventure where you have to kill the Evil witch.
□ **APD356 POWERBASE V2.0** This is an easy, friendly and Powerfully database which can handle upto 10,000 records.

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□x **1700 ANTI LEMMINS** Anim Requires **(2) 2Mb**
□x **1703 THE DATING GAME** Anim requires **(2) 2Mb**
□x **1794 VTOL CONTEST** Features a helicopter & the stealty jet plane. Heli try to keepup. **(1Mb)**
□x **1842 SHUTTLE COCK** Animation **(1Mb)**
□x **1850 LATE NIGHT** & **TERMINAL** Anim **(1Mb)**
□x **2013 AGILLITY** Animation disk **(1Mb)**
□x **2021 VIETNAM CONFLICT** Animation **(1Mb)**
□x **2133 GULF WAR CONFLICT** An Excellent Anim. By far his best work to date. Recommend. **(2Mb)**
□x **2307 AMY AT THE MOVIES II** This is one of the latest animation from Eric Schwartz. **(3) 1Mb ONLY.**
□x **2310 AMY vs THE WALKER II** This is one of the latest animation from Eric Schwartz. **(2) 3Mb**

LATEST DISKS

□ **2281 CREEP SHOW II / POWERS OF PAIN** This disk contains very detailed hi-res pictures. An excellent production & recomend by all at PD-Soft.
□ **2285 TERMINATOR 800 ANIMATION** Another terminator animation following the film.
□ **2287 PHENOMENA DEMISION - DENISH**
□ **2288 TEA POT ANIMATION** Two tea pots wobble around & swop lids during the process. (1Mb)
□ **2289 MY TIN TOY** The Tin toy beats a drum (1Mb)
□ **2291 EARTH SORROW - HAWK**
□ **2299 DARK DEMON - DATA EXPERIENCE MEGA DEMO** Another excellent mega demo release.
□ **2300 COMBAT OF CATALOGUE Vol 1 & 2** By ICE An excellent collection of Amiga music(2)
□ **2302 THE PUNISHER - DIGITAL** Not just another mega demo an excellent production.
□ **2306 C64 TUNES AGAIN** A wide collection of old commodore 64 classics. various tracks from the past.

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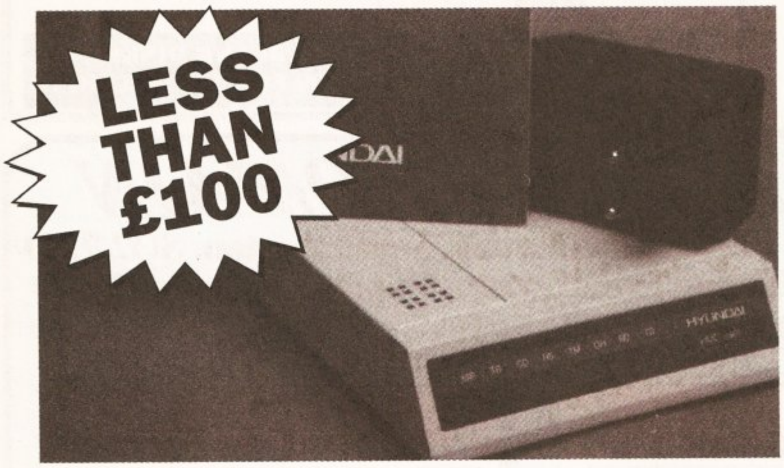
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Amiga Digitizer 'Colourpic' hardly used. Still with original leads instructions software, only owned 1 month. Genuine reason for sale. Offers around £300. Also Amiga 'Tenpack' Games £20 ono. ☎ 0297 625161 (Seaton).

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Amiga A590 hard drive and 2 Meg RAM boxed as new, includes software £265 Checkmate A1500 expansion system for A500. As new £105. ☎ Andy Southampton 869198.

Megachip 2000 £120. A500 IMG RAM £260. IMG RAM expansion with SCS1: Interface £130. ☎ Mark 0449 676275.

Amiga 3000, 25MHz 105 Meg. Quantum hard drive, 6 megs total RAM, 2 megs chip RAM £2,250 ono. Bargain etc, ring Roelof 081 553 2137 evenings.

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FF-547 **RMBSHIFT:** Allows you to use the right mouse button as a shift key for multiple selection of icons etc (A/S 8/10).

FF-561 **TOOLS DEAMON 1.0:** A useful utility that makes it easy to add programs to the tools menu on Workbench 2 (A/S 8/10)

FF-562 **FILER:** a very powerful CLI utility that can be customised to suit the user. Workbench 2x required. (A/S 8/10)

FF-563 **BBASE II V5.0:** A simple database program using an intuition interface. Sorts and searches for information. Limited to 9 fields in each record, features include fast sorting, search in any field, and best of all it is really easy to use.

FF-573 **MULTIPLAYER:** Music player that will play over 15 types of module including SoundTracker, Noisetracker and MED.

FF-577 **TURBOQUANTUM:** A SCSI bit twiddler program that will set or clear the "disable disconnection" bit in a quantum drives control parameters. Can result in a large performance boost on some systems.

FF-578 **SPICE3 V3e2:** A circuit analysis program. This version was written in C and includes dynamically allocated memory, interactive post processing and graphical plots, requires a minimum of 1 meg.

FF-579 **BINTOHUNK:** A utility to convert a raw data file (text, bitmapped graphic etc) into an Amiga hunk format object file that can be linked using Blink.

FF-580 **WORLDDATABANK v2.2:** Using a database of coordinates compiled by the CIA and made available under the freedom of information act, this program plots world maps in cylindrical or spherical projections with various degrees of magnification. Includes the largest available data file ofdetailed mapping of even small sections of the globe. Disk includes source code.

FF-589 **TERM V1.9c:** A telecomunications program with some nice features, including an ARexx port, external process communications, XPR support, Programmable function keys, postscript downloading to laser printer, phone book, programmable panel buttons, public screen support etc, documentation in English and French. Requires dos 2.0 and update to Term 1.8A which received a 10/10 rating in Amiga Shopper.

FF-591 **VIM:** A clone of the Unix text editor "vi" very useful for editing programs and other ASCII text. Has many options including multilevel undo, command line history, ability to edit binary files, yank buffers etc.

FF-592 **LAZc:** A graphics interface for the archive utility Lharc, Arc and Zoo.

FF-593 & FF594 **ANALYRIM:** An integration of the AnalytiCalc spreadsheet and the RIM-5 database management system 2 meg of ram needed of which 750k must be contiguous.

FF-595 **P-COMPRESS:** A gimmick free and very easy to use program for most compression requirements.

FF-595 **P-READER:** An all purpose reader that displays text, pictures, animations and sounds, which may be uncompressed or compressed with P-Compress.

FF-595 **P-WRITER:** A text editor with special facilities for inserting text colour and style changes and for preparing illustrated text for P-Reader.

FF-596 **RAYSHADE:** A ray tracing program ported to the Amiga from Unix. Features include nine types of primitives, composite objects, point directional and extended light sources, solid procedural texturing and bump mapping of primitives etc.

FF-597 **ICON TOOLS:** four programs to manage some aspects of icons using the intuition interface and allowing one to operate on many icons at once by shift-clicking etc.

FF-598 **DX100:** Editor/Librarian for the Yamaha DX100, DX21 and DX27 synthesizers.

FF-598 **FB-01:** Edit all parameters for FB-01 voices and configuration has graphical display of voice envelopes to improve the editing process. The librarian provides the means to organise and store a bank of voices or configurations on disk. Send customised banks to a Yamaha FB-01 or receive banks from this intrument. Print hard copy of voice and configuration banks.

FF-598 **TX81Z:** Editor/Librarian for the Yamaha TX81Z and DX11 Synthesizers. Provides voice and librarian features similar to the FB-01.

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LPD-002 **ARC ANGELS MATHS:** An educational game to help kids with their maths.

LPD-004 **THINGAMAJIG:** Kiddies jigsaw type program with 24 pictures to choose from and a difficulty level. 1 meg.

LPD-005 **JUNGLE BUNGLE:** A very good graphic adventure written with children in mind.

LPD-008 **WORK AND PLAY:** 3 educational programs for kids. Click Clock, Fun Times Tables and Lets Go Shopping. 1 meg.

LPD-010 **THE WORD FACTORY:** A neat spelling game for the kids. 1 meg

LPD-015 **ARC ANGELS SHAPES:** Fun for the kids. Build colourful pictures from predefined shapes. 1 meg.

LPD-016 **REVERSI II:** A new improved version of the old classic board game Othello.

LPD-025 **THE MISSION:** An excellent text adventure by Jim McBride.

LPD-029 **BIG TOP FUN:** A top quality educational program, three games based on circus acts. 1 meg.

LPD-037 **ROCKET MATHS:** A game designed to aid children with their maths. Various levels of difficulty may be set.

LPD-039 **MAGIC FOREST II:** Version 1 was given away free with Amos. This program is far superior and continues the story set by version 1. 1 meg.

LPD-041 **RESCUE:** A 3D adventure in which you must solve a murder. You can click on objects and examine them for clues etc. Excellent game.

LPD-042 **X-STITCH:** Prints out your pictures in the form of a cross stich pattern for embroidering.

LPD-044 **FORMULA 1 CHALLENGE:** A very comprehensive racing car game for one to four players.

LPD-047 **DIRTY CASH:** An excellent fruit machine game with all the normal features like hold, gamble nudge etc.

LPD-052 **LC24/200 FONTS:** Fonts to down load to your 24 pin printer along with an editor so you can create your own.

LPD-057 **KIDDIES CLIP ART:** Lots of good quality clip art designed with children in mind. Can be used in your favourite graphics package.

LPD-061 **THE FINAL CHAPTER:** A 3D interactive graphic adventure. I did not get very far but the bit I did was quite impressive.

LPD-065 **POWER PLANNER & DIARY CHECKER:** A database in which you can store telephone numbers and addresses etc also a diary to help keep track of appointments

LPD-067 **CYADONIA (CYAD II):** The follow up to Cyad with improved graphics and even more devious puzzles. Very addictive.

LPD-069 **MAGICAL MIXUP:** This one is addictive. A type of jigsaw puzzle where a picture is broken up into pieces and you have to put it back together again. Lots of pictures and various levels to suit young and old.

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PS-001 **SPACE BLOB:** Multi level game where you collect all the glowing items but avoid the beasties like the plague.

PS-003 **Q-BOID:** A nice variation on the tetris theme good fun and very addictive.

PS-005 **SUBCULTURE:** A shoot em up similar to R-Type with extra large creatures at the end of each level.

PS-007 **DIZZY LIZZY'S DASH:** A boulder dash type game with large graphics.

PS-008 **DIZZY LIZZY'S EDUCATIONAL 1:** Four games to make learning fun.

PS-009 **DIZZY LIZZY'S EDUCATIONAL 2:** Three games to continue the theme that learning can be fun.

PS-011 **TRON:** A two player variation of the light cycles game.

PS-013 **BOUNTY BOBS HIGH NOON:** Playing the part of Lucky Luke you have to capture 20 bad guys dead or alive. 1 meg.

PS-014 **CLASSROOM MATHS:** A selection of Mathematical games so your kids can learn and play at the same time.

PS-015 **CRYSTAL CAVERNS:** A follow up to space blob with more levels and oh no more monsters.

PS-020 **AVINA BLUE:** A very good horizontal scrolling fast action shoot em up to test the best of reflexes.

PS-021 **CHALLENGE OF THE MATRIX:** Puzzle type game where squares are removed by moving over them. Sounds easy but there are obstacles and one wrong move can mean sudden death. Watch out for the bonuses!

PS-022 **SPECTRUM:** This one seems to be a mixture of two classics, Space Invaders and Breakout. With good graphics and nice sound effects it's definitely one for your collection.

PS-023 **I AM THE WALRUS:** This one is not a game it's a musical animation featuring an unusual rendering of Lennon and McCartney I am the Walrus.

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FF-PA FLETCHER MONO PACK (1) 6 disks
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UT-014 **AMIGA SYSTEMS TEST:** Tests keyboard, mouse, disk drive, memory - both chip and fast - screen resolutions, clock, sprites and more.

UT-041 **VISICALC V3.0:** A spread sheet program

UT-044 **M-CADD:** Computer aided design program with lots of drawing tools and load/save feature:

UT-064 **COMPLETE C MANUAL V2.0:** 4 disks each one about 98% full . A must for anyone wanting to learn C. Executable examples along with the source code to take you through screens, gadgets, windows etc. On disk documentaion shows how to use a compiler, how to link code etc a very useful tutorial.

UT-074 **MANDELVROOM:** create spectacular Mandelbrot or Julia sets.

UT-072 **BANK'N V1.5:** An excellent utility for keeping track of your bank account, produces reports on income and expenditure so you can see where the money is going. Handles multiple accounts.

UT-174 **TEXT ENGINE & AZSPELL:** A very nice wordprocessor along with a spell checker.

UT-097 **NORTH C V1.3:** (2 disks) a complete C compiler along with libraries and all.

UT-108 **PRINT STUDIO:** Will print text with different options. Will also print/save screens and windows or parts of, alter colour palette etc.

UT-109 **SNOOPDOS V1.0:** Useful program that runs as a background task and informs you of the libs etc accessed by programs as they load.

UT-110 **MED V3.1:** 2 disks, the ever popular music program along with some examples, 500 & 500+.

UT-139 **DRAWMAP V2.30D:** An upgrade of the excellent map drawing utility.

UT-151 **BOOTX V4.1:** (500 only) read next entry

UT-152 **BOOT X V4.1** (500+ only) An excellent (probably the best) and easy to use virus killer for the Amiga, also on this disk is LVD which works alongside BootX to give even more protection.

UT-185 **LABEL MAKER V1.3:** Brilliant, allows you to create and print full 3.5" disk labels with graphics and in colour too. Nothing is static you can move text and graphics around at will. Full load and save features.

UT-187 **CHEMESTHETICS V2.1:** Design and create molecules. Some examples are included on the disk.

UT-188 **MESSY-SID II:** Converts Data files between Amiga Dos and MSDos.

UT-189 **AMIBASE PROFESSIONAL:** An easy to use data base program an upgrade to the very popular Amibase.

UT-192 **HARD DRIVE UTILS:** Various utilities for those fortunate enough to have a hard drive.

UT-193 **DICE C COMPILER:** (2 disks) Another very popular C compiler with includes and full documentation.

GA-109 **PETERS QUEST:** Can you rescue your girl friend by completing the twenty levels.

GA-112 **DITRIS:** A two player Tetris clone and very good too.

GA-126 **CARD SHARP:** A collection of Solitaire type games professionally presented.

GA-129 **MIND GAMES:** A collection of 21 games, a couple of which do not work on the plus but the disk is still well worth having.

GA-131 **SUPER SKODA CHALLENGE:** for two to four players and great fun trying to get into position to blast one of your opponents without being blasted yourself.

GA-132 **SURVIVOR:** An adventure type programme features you stuck in a space craft with a blood crazed alien that has killed all the other members of your crew. Very good graphics and well presented.

GA-133 **BATTLE CARS:** A 3D vector graphics driving game for one or two players. Try and get a position behind you opponent and blast him. It takes quite a few hits to eventually break through the armour.

GA-134 **WASTELANDS:** An impressive 3D graphic adventure.

GA-135 **PARACHUTE JOUST:** Two of you jump out of a plane with only one parachute you must make sure you are the one that gets it. The animation at the end of the game is great as the one without the parachute falls out of the sky through the roof of a barn.

GA-139 **NU GAME:** A very nice vertical scrolling shoot em up. This is one of the best PD games of this type that I have seen.

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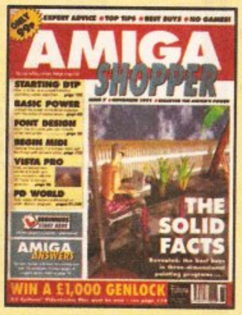
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8	A hardware and add-on buyer's guide special, tons of tips for Professional Page and an in-depth look at the HAM-E colour system. Plus reviews of Invision Plus and Dr T's KCS.
9	The definitive guide to the A500 Plus, down-loading satellite images, choosing sequencers, using video and hands on advise for ProPage 2.
10	A special graphics issue featuring the Amiga's top art packages plus reviews of Audition 4, Sound Enhancer and a guide to desktop video directing with Showmaker.
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Such has been the demand for our demo disks that we've now decided to offer you all three of these fabulous floppies for just £1.75! Yes, that's £1.75. Just use the order form opposite and they'll soon be on their way.

DISK 1 Contains demos of *AMOS* from Mandarin – the programming language that took the Amiga world by storm, *Devpac* 2 from HiSoft – the assembler that's used by the professionals, *Real Things* from RGB Studios – it brings things to life in *Deluxe Paint III* and lets you design, build and fly your own butterfly.

DISK 2 WORDWORTH This brand new word processor from Digita International is described by the company as 'a writer's dream' and you'll be able to see if it is for yourself with this demo. You will also get a voucher enabling you to buy *Wordworth* for just £99.95 – that's a saving of £30 on it's normal price! **SEQUENCER ONE** In issue 2 of *Amiga Shopper* we said of this new sequencing program from Gajits Music Software "it has to be *the* budget priced sequencing software for the Amiga." Why not find out for yourself and take advantage of our special voucher offer to obtain a free disk of exciting new samples for use with *Sequencer One*?

3D CONSTRUCTION KIT If you've ever wanted to create your own three dimensional worlds then now is your chance with Domark/Incentive's brand new game creation program. It allows you to use Incentive's famous Freescape programming system to create your own stunning three dimensional games – without a scrap of programming knowledge. Don't be fooled though, this is a utility that will put great programming power at your fingertips.

DISK 3 SPECTRACOLOR: The new entry into the HAM painting arena looks set to upset the applecart. Try its 4,096 colours and animation facilities out for yourself with the demo version. You can wrap brushes on to three dimensional objects, and try out the rub-through effect for blending two images.

SUPERBASE PROFESSIONAL 4: You have read a lot about the Amiga's premier database, and now here's your chance to try it out for yourself. Superbase is a fully relational system with its own programming language, and with it you can set up a database for any purpose you like. It can even handle graphics, as well as numbers and text.

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The lion's share of Amiga PD

Ian Wrigley takes his usual look at all that's best in freely-distributable Amiga software

The PD scene at the moment seems to be somewhat in the doldrums – certainly as far as 'serious' PD is concerned, anyway. Normally, winter is the most prolific time of the year for programmers (the cold weather, I guess) but this year's offerings have left PD houses in a state of mild despair. Many of the PD houses that I've talked to have bemoaned the lack of quality software available, and even the Fred Fish disks have been carrying less-than-inspiring stuff recently.

One source of frustration to large numbers of Amiga users has been the non-appearance of *SID v2.0*. *SID* is the most popular file management utility available on the Amiga, and version 2.0, with its 3D-style interface and many new features, has been eagerly awaited.

Rumours from the beta testers have been extremely positive, and the Amiga community held its breath. And held it. And held it...

However, the light has finally appeared at the end of the tunnel, with a posting on a number of bulletin boards by the author, Timm Martin. It seems that he's been dogged with disasters during the development of the program: first he was taken ill for a couple of months and then, just as he was about to release the program, he discovered that he would have to totally re-write it, as it had become too big for the method of programming that he was using. (It's all very technical, but, basically, if he'd carried on, the program would have ended up at several hundred Kilobytes in size, which would have drastically reduced its usefulness.) But finally the program is nearing completion (again).

> *"bBase can cope with a database of up to 600 records or a maximum size of 100K."*

By the time you read this, registered users of version 1 of *SID* should have received their copies, with a slightly cut-down demonstration version appearing for general distribution a couple of months after that.

Anyway, enough of all this. I had promised that this month I'd be looking at PD and shareware word processors. Unfortunately, that feature has been postponed until next month, due to my old and trusty printer becoming merely my old printer at a vital stage in the testing of the programs. A new one has just been lovingly unwrapped, so the WP feature will definitely happen next issue. Until then, lets see what the postman delivered this month...

BBASE II
Fish disk 563
Unique Computing

bBase is a small, but perfectly usable, database written by Robert Bromley in HiSoft compiled Basic. Actually, two versions of the program come on the disk: *bBase II* and *bBase II50K*, for those with memory limitations.

The program can cope with a database of up to 600 records or a maximum database size of 100K, whichever comes first; a record can have up to nine text fields. At its maximum, the program takes around 375K – so the author recommends that it should not be run on a 512K machine. However, the 50K version of the program reduces the maximum memory available to (believe it or not) 50K, and so should run on an unexpanded machine with few problems.

You will need 'arp.library' in your LIBS: directory to run *bBase II*; this is a library which many PD disks now include as standard, although surprisingly Fish disk 563 didn't. The program can be launched either from the Shell or directly from the Workbench – the Shell allows the program to be launched so that no file writing is possible, to avoid corrupting or altering a database, although this option can be enabled and disabled from within the program, regardless of whether it was launched from Workbench or Shell.

On launching, you are presented with a display which asks you to press one of two Function keys, depending on whether you want to load an existing database or create a new one. Good news is that a sample database file is included for you to experiment with.

A reasonable number of standard facilities are included, such as the ability to sort a database in either alphabetical or reverse-alphabetical order on any of the fields – although it's a pity that a

BEGINNERS START HERE

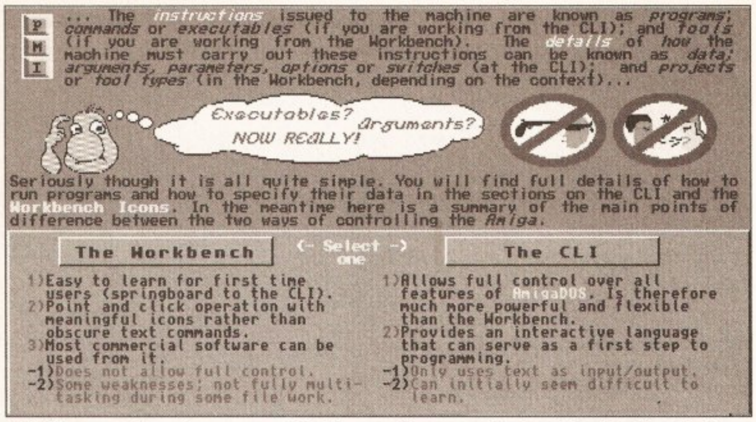
What's the difference between PD and shareware?

It's quite simple. PD, or 'public domain', is software which the author has released to the computer community at large. In its truest sense, once software has been released into the public domain the author has no more control over it – it can be altered by anyone, hacked about by other programmers and so on. However, in practice, most software authors put some form of limitation on how their programs can be distributed and whether anyone else is allowed to alter the program or documentation files. Strictly speaking this is not public domain software, it's 'freeware'.

Shareware is something totally different; it's software provided on a 'try before you buy' basis. If you receive a shareware program which you like and intend to keep on using, you are morally obliged to pay the author the stated amount. For your registration fee, you often get printed manuals or an improved version of the program – so it's worth doing. And since most shareware registration fees are far less than you would pay for a similar commercial program, you're getting a bargain. However, programmers only continue to write shareware if users register – otherwise it's not worth their time to do so. As a user of shareware programs, you are directly responsible for whether great, cheap Amiga software keeps getting written – think about it the next time you ignore that 'please register' screen.

Can I give anyone else copies of PD and shareware?

Yes – that's the way the programs get widely distributed. But do note any criteria for distribution in the docs files – many programs must be distributed along with all documentation, for example. And make sure that you don't give anyone any registered versions of shareware which you have – once you've registered, you should keep your shareware like any other commercial program. Give your friends unregistered copies, and encourage them to pay up too.



***EdLib* has produced a reasonable, if sometimes confusing introduction to the Amiga. It's certainly worth a look – you may find that with this information you don't need to buy a tutorial book**

special date field was not included, since this means that records cannot easily be sorted by date order (3/1/92 ends up before 1/12/99, for example). The sort itself is fast – less than two seconds for a 50-record database.

Once the number of fields has been defined when a new database is created, there is no longer the opportunity to add extra fields at a later date – so make sure that you plan well before you start. On the other hand, field names can be changed at any time, so it may be worth including one or two blank fields when you create the database, so that extra information may be added in the future if you realise that you want to include extra information.

Records conforming to a search key can be selected (but the key can only be in one field), and the entire database or just the matching records can be displayed on-screen and printed out.

There are a couple of things I don't like about *bBase II*: each field can only contain 46 characters, for example, and it would be nice to enter search criteria in multiple fields.

But on the whole, this is a neat little piece of software, which should be perfectly adequate for many users – including me.

Incidentally, *bBase II* is also available on the Digitz disk 'Util 252', which doesn't include *bBase II50K* but which does have a couple of other database programs instead.

Program rating 7/10

EDLIB AMIGA GUIDE
EdLib

The Amiga Guide is not strictly PD or shareware – it's licenseware, which means that you can't copy it and give it to anyone else, and that you can only obtain it from a few sources. However, it's cheap enough, at £3.50, to be included here with no qualms.

The disk is exactly what its name suggests – a guide to the Amiga – what an inspired title.

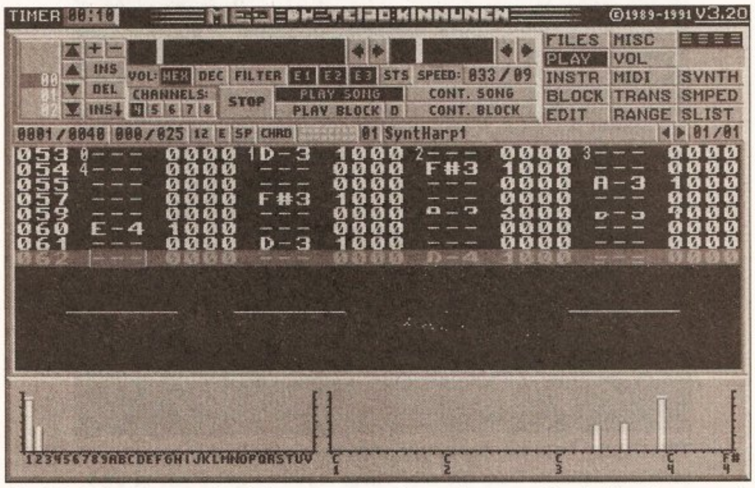
Presently it only covers Kickstart and Workbench 1.3, although a Workbench 2.0 version is apparently in the works. However, much of the information – especially the general stuff on disks and so on – is common to both machines, so even Workbench 2.0 users should find something of interest.

> **"EdLib's Amiga Guide could contain all you need to know about your Amiga."**

The text is displayed in a colourful and interesting manners, with a wide variety of transitions between screens: scrolls up, scrolls down, dissolves, fades and so on. However, some of the colour choices are a little lurid, and may pose problems to those who use their Amiga with a TV set; certainly when I hooked mine up to the portable TV some of the screens were almost unreadable.

The actual information contained in the guide is undoubtedly worthy, important and accurate. The only trouble is, it reads as though it has been written by someone who knows much more than just the basics, and is constantly struggling to 'write down' to the level required.

I don't consider myself to be anything like a beginner to computing, but some of the passages baffled me for a time, until I worked out what the author was trying to say. Some passages, I'm sure, would leave the total novice completely lost. On the other hand, much of the technical information was perfectly well explained and, given a couple of readings, should leave the beginner much better informed than they were before.



***Med 3.20* is *the* standard shareware music package on the Amiga. It may not be the easiest program to learn, so experimentation is the key. There are however numerous samples to play around with to get you started**

Sending off your name and address to register the disk entitles you to purchase the guide's supplement disk, which enables you to print out the guide's information, as well as containing a collection of utility and games programs. All this lot will cost you the princely sum of 50p.

If you are a beginner to the Amiga, you could do much worse than buy a copy of this disk; that recommendation holds even more strongly if you already have a grasp of basic computer principles and want to know how they relate to the Amiga – if you're already familiar with the PC, for example. If the subject still leaves you cold, buy a conventional tutorial book. On the other hand, EdLib's *Amiga Guide* could contain all you need to know about the Amiga.

Program rating.....................6/10

MED 3.20
PD Soft disk v509

MED is probably the best known 'tracker' around. With it you can record, edit and play back your own compositions or the many tunes which are available in the public domain. Tracks can be played back either via the Amiga's internal sound chips, or through a MIDI instrument (if you have a MIDI interface, of course).

Version 3.2 of *MED* is the last one to be freely distributable, as author Teijo Kinnunen is now

Where to get it

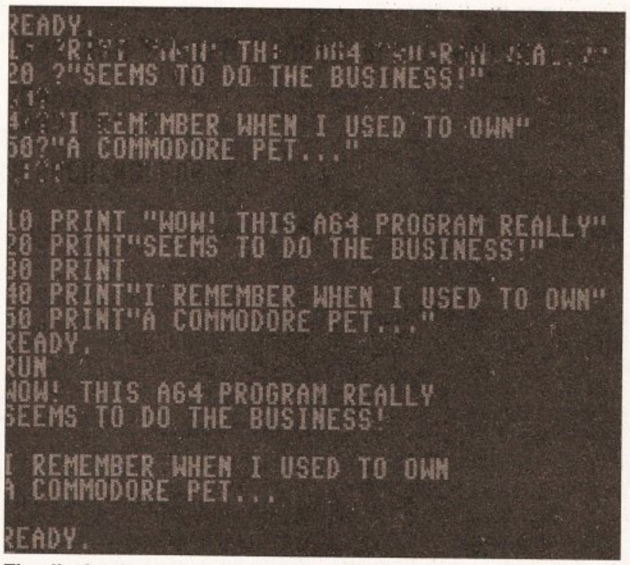
There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect up, and you have to pay phone charges (and sometimes pay the BBS a connect charge, too). You pays your money and takes your choice.

There are a number of bulletin boards with good Amiga areas; for instance, 01-for Amiga (071 377 1358) and the Cheam Amiga BBS (081 644 8714) both have a good range of files, including many of the Fish disks. CIX (short for Compulink Information eXchange), a conferencing system, also has a very active Amiga area with many enthusiasts exchanging help and advice. There are plenty of files on offer, too. The CIX modem number is 081 390 1244, and copes with a wide range of data speeds.

If you take the other route to obtaining software, you should expect to pay anywhere between about 99p and £2.50 for software from a PD library. Prices vary so much because of a range of things – the way the library is set up, for a start. One person with one Amiga and one disk drive, operating out of their spare room, has far fewer overheads than a library with dedicated premises, paid staff and a commercial disk duplicating machine. Whether you get the same level of service out of the two types of operation (and many in-between) is a matter for you to decide. Some 99p PD houses are great, and give a marvellous service, some are dreadful and keep you waiting ages for your disks. The only way to find out for sure is to spend that 99p and see.

concentrating his time on *OctaMED*, a commercial program which is exclusively available from Amiganuts (for £20). However, *MED v3.20* is plenty powerful in its own right, and no serious Amiga musician's software collection is complete without it.



The display from the Commodore 64 emulator is almost indistinguishable from the real thing. If you've got a pile of C64 disks lying around, this program is a must!

The disk from PD Soft contains numerous samples (*MED* has a built-in sample editor), but only one actual tune. It's pleasant enough, but it would have been nice to have more than one available for inspiration before taking the plunge and composing one's own masterpiece. Also included with *MED* is a stand-alone player, so that you're not faced with the complexity of the whole thing if all you want to do is listen to music.

MED is not the easiest program to learn, and the documentation doesn't really help too much. The only way to become proficient is to experiment; just keep trying and eventually you'll produce something which doesn't sound exactly like a chorus of tomcats...

Program rating....................9/10

Rating the programs

I use two different ratings systems (just to be awkward). If I'm reviewing a single program, I give a 'Program rating' at the end. If, on the other hand, I'm looking at a disk full of programs, utilities or whatever, then you'll find a 'Value for money' rating at the end.

TMKBP
Fish disk 587

TMKBP stands for 'The Multi-Kickstart Board Project', and is a complete description of how to build yourself a board which will switch between up to three versions of Kickstart, any of which can be selected by flipping an external switch.

The authors, Neil Coito and Michael Cianflone, will send you a complete kit of parts, including the printed circuit board but excluding Kickstart ROMs, if you want (it costs about $20 for delivery to the UK), or you can build the project yourself. The switcher is compatible with the A500 and A2000.

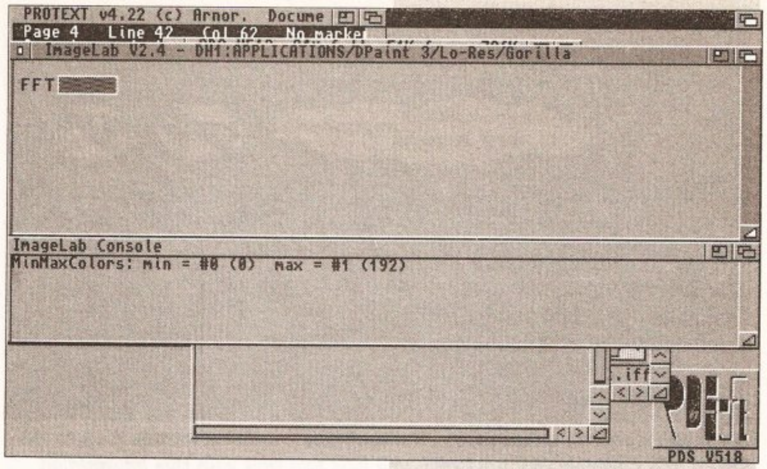
The disk contains a doc file with full, comprehensive instructions – including a description of exactly how the thing works, for those interested in such complexities, and a series of IFF files which show the PCB layout and show you how to connect the thing together. The IFFs are displayed with a program called LoadImage, which comes on the Fish disk, although of course any IFF viewer could be used.

Most of the graphics are actually larger than the screen size, but LoadImage allows the user to scroll around by clicking near the edges of the screen. It's a neat program, and one which makes *TMKBP* worth getting on its own account.

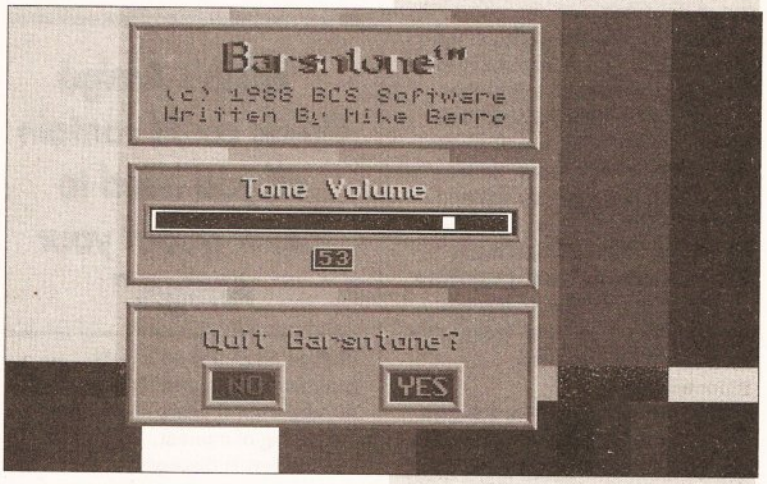
Now, I can't say that I've actually tried the project out, and you should remember that attacking your A500 (or even A2000) is likely to do nasty things to your warranty. But it's rather nice to see something a little bit different in the public domain like this, and the fact that the authors are selling kits of parts suggests that the project has been well tested.

I'd be interested to hear the views of any electronics experts out there on how the technical content stands up to analysis...

Program value 8/10



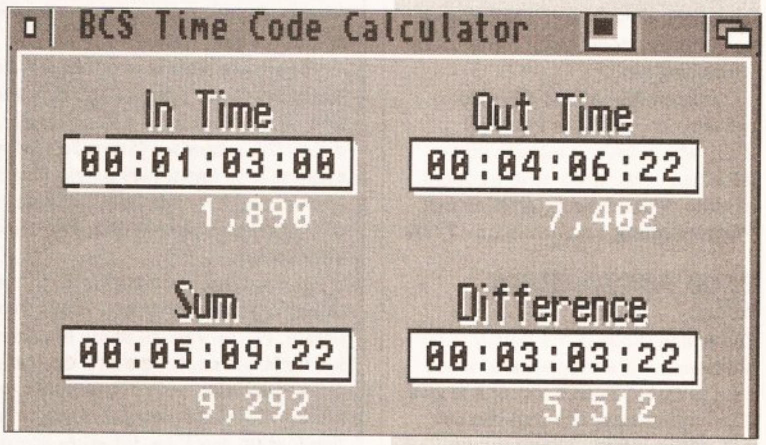
***ImageLab* is a great little program for making IFF images completely unrecognisable**



***Barsntone*, from PD Soft disk V518 is just one of the video tools available. It generates an industry-standard display and audio tone, for recording on to video tape as a 'leader'**

THEA64PACKAGE
Fish disk 555

Er... wow. This one really is a beauty, and evoked many sighs of nostalgia, for the days when I was nowt but a youngster in short pants. The package, *TheA64Package*, and is as comprehensive a Commodore 64 emulator as you could wish for.



Another utility from PD Soft disk V518, *TimeCalc* takes the grief out of calculating SMPTE timecode differences

Installation from the Fish disk requires first decompressing two files on to two blank disks, and then using those disks. On the other

continued on page 148

Crazy Joe's

Amiga Public Domain Software

PD GAMES! PD GAMES! PD GAMES!

117 **MONOPOLY (NP)** popular old board game.
135 **CARD & BOARD GAMES (NP)** Cluedo + solitaire games.
195 **ELECTRIC TRAIN SET (NP)** for when the kids are asleep!
315 **RETURN TO EARTH (P)** "Elite" type space trading game.
496 **HOLY GRAIL * (NP)** excellent text adventure.
648 **STAR TREK (USA) (2) * (NP)**, graphic adventure.
680 **LEARN & PLAY (2) (NP)** maths, words and colouring for kids.
727 **RICHTER'S STAR TREK (2) (P)**, best version to date.
766 **TREASURE HUNT (NP)** pirate treasure map game for kids.
957 **PIPELINE (P)** assemble your pipe quickly to keep the oil flowing.
962 **DRIP! (P)** rust the pipes, avoid the nasties arcade game.
987 **SNAKEPIT (P)** eat the food in the maze without eating yourself.
991 **JEOPARD* (P)** 2 player game of world conquest.
1004 **GAMES DISK 9 (P)** including Tetrix Metallica!
1113 **WET BEAVER GAMES (P)** funny demo plus arcade Ping Pong.
1230 **DRAGON CAVE (P)** Sokoban type game with excellent gfx.
1520 **BALLOONACY * (P)** bomb the buildings & land your balloon.
1539 **MEGABALL (P)** the best breakout game around!
1544 **SEVEN TILES (NP)** futuristic football game like Speedball.
1577 **FRUIT MACHINE* (NP)** best fruit machine simulator bar none.
1584 **MISSILE COMMAND (NP)** stop missiles destroying your cities.
1591 **QUIZ MASTER* (NP)** excellent trivia game.
1670 **WHEEL OF FORTUNE (P)** based on the TV show.
1711 **MENTAL IMAGE GAMES DISK (NP)** 3 brill games on one disk!
1715 **FRANTIC FREDDIE (NP)** C84 favourite platforms & ladders.
1720 **CABARET ASTEROIDS (NP)** faithful version of the classic.
1746 **WORD GAMES VOLUME 1* (P)** exercise the grey matter...
1747 **WORD GAMES VOLUME 2* (P)** ... and not the joystick!
1748 **STRATEGY GAMES * (NP)** serious stuff including Sea Lance.
1749 **TRUCKIN' (2) (2D) (P)** run your own trucking company.
1832 **POM POM GUNNER* (P)** WW2 arcade action - our No 1 game.
1879 **SEA LANCE* (P)** Trident submarine simulation.
1882 **SIMPSONS GAME (P)** help Bart in this S.E.U.C.K. game.
1883 **BIONIX II* (P)** never-ending shoot'em up!
1905 **J NICKLAUS COURSES 1** data disk only!
1916 **AIR ACE II (P)** excellent WW1 shoot'em up.
1926 **NAPOLEONIC WARFARE SYSTEM* (P)** war game umpire.
2011 **TWINTRIS* (NP)** 1 or 2 player Tetris clone - very good!
2013 **ZEUS (P)** simple but addictive puzzle game.
2016 **DOWNHILL CHALLENGE** fun on the ski slopes.
2018 **WIZZY'S QUEST* (NP)** wizard fun! Excellent game!
2049 **MATHS DRILL (NP)** maths exerciser for all ages.
2050 **INSIDERS CLUB* (NP)** good stock exchange simulation.
2051 **ATIC ATAC* (NP)** explore and collect arcade game.
2052 **SHAPES (P)** addictive puzzle fun!
2057 **BATTLE PONG* (NP)** 1 or 2 player arcade classic.
2155 **GHOST SHIP (NP)** 3D arcade adventure.
2167 **LLAMATRON (NP)** Jeff Minter classic!
2177 **J NICKLAUS COURSES 2** data disk only !
2178 **SKY FLYER** excellent new SEUCK game!
2183 **REVENGE OF MUTANT CAMELS** Minter's back

DEMOS AND ANIMATIONS

747 **POPEYE MEETS THE BEACHBOYS (P)** very funny!
773 **SHARK ANIMATION* (NP)**deadly ray-tracing!
825 **BUDBRAIN 1 (2) (X) (NP)** great 2 disk demo + naughty bits!
895 **A TRIP TO MARS (NP)** demo with a difference.
906 **MADONNA CARTOON ANIM* (NP)** short digitised animation.
935 **MADONNA: HANKY PANKY (P)**excellent Madonna sample.
1033 **AT THE MOVIES** (NP)** loves of a squirrel?
1188 **FILLET THE FISH (P)** funny cartoon.
1229 **BUDBRAIN 2 (NP)** good as the first one? You judge!
1238 **EVIL DEAD DEMO (X)* (NP)** get them before they get you!
1453 **MORE AEROTOONS* (P)** 3 Schwartz classics.
1540 **AMY VS. WALKER ANIM* (NP)** Eric Schwartz at his best!
1541 **BATMAN ANIMATION* (P)** funny Schwartz animation.
1552 **MAGICIAN ANIMATION 2* (P)** simply magic!
1560 **PHENOMENA ENIGMA* (P)** suberb grx and music.
1628 **DO THE BART, MAN* (NP)** a must for all Simpsons fans!
1701 **TRON ANIMATION (2)* (P)** based on the film.
1707 **DECAY: SIMPSONS DEMO* (P)** should appeal to everyone.
1753 **LIFE OF BRIAN (2) (P)** sample from the film.
1841 **ANTI LEMMIN' DEMO (2) (NP)** ** for Lemmings fans with 2 meg.
1850 **THE WALL (6) (2D) (NP)** * mammoth Pink Floyd six disker!
1856 **BETTY BOO ANIM/SLIDESHOW (P)** doing the Amiga.
1885 **ROBOCOP ANIMATION* (P)** digitised from the film.
1900 **SILENTS: ICE DEMO (NP)** superb music and graphics.
1902 **VIRTUAL WORLD*** 3D filled vector demo.
1943 **WINDSURFER ANIMATION (2) (P)** * very good.
1947 **MR POTATO HEAD (P)** * funny cartoon antics.
1948 **MR POTATO HEAD CHIPS ARE UP! (P)*** More adventures
1956 **CREATURE COMFORTS DEMO (NP)** from the TV adverts
1982 **3D PINBALL ANIMATION* (P)** beautiful ray-tracing.

AMIGA A500 PLUS

Certain software will not work on the new Amiga. We are compiling a list of compatible titles, but this will take some time to complete. In the meantime, problems can only be checked as they occur.

USEFUL SOFTWARE

81 UEDIT WORD PROCESSOR
119 AMIGA MCAD (P)
410 DPAINT CARTOON BRUSHES
442 DPAINT FONTS DISKS (4) (P)
458 HAM RADIO UTILITIES (5) (NP)
571 JAZZBENCH (NP)
580 DOPE INTRO MAKER (NP)
591 BUSINESS CARD MAKER (P)
632 MSH (MESSYDOS) (NP)
642 C MANUAL
661 PROGRAMMING DISK 1 (NP)
682 SOUND APPLICATIONS (2) (NP)
684 VIDEO APPLICATIONS (2) (P)
901 THE COMMS DISK (NP)
1022 AMOS UPDATE 1.3 (P)
1095 DATABASE WORKSHOP (2) (P)
1097 DPAINT CLIP ART (2) (P)
1099 VIDEO GRAPHICS (4)
1117 GENEALOGY* (P)
1228 ST EMULATOR (GERMAN) (NP)
1273 C-LIGHT (P)
1450 NEW SUPERKILLERS (P)
1451 ELECTROCAD V1.4 DEMO (P)
1452 AMIBASE (P)
1536 NORTH C (PACKED) (NP)
1537 NORTH C (UNPACKED) (2) (NP)
1545 SPECTRAPAINT V3.0
1550 FLEXIBASE V2.0 (P)
1569 LANGUAGE TUTOR (NP)
1606 DATABASE MASTER 2.0 (NP)
1629 SPECTRUM EMULATOR (NP)
1663 DYNAMITE BRUSH FONTS (P)
1858 202 UTILITIES (NP)
1878 TEXTPLUS WORD PROC. (P)
1880 DCOPY & UTILITIES (NP)
1884 EQUINOX INTRO WRITER* (NP)
1886 MED V3.10 (NP)
1893 DICE V2.06A (NP)
1896 DESK BENCH (3) (NP)
1906 PAGESETTER CLIP ART (8) (P)
1914 SLIDESHOW CONSTRUCTOR (NP)
1951 KING JAMES BIBLE (3) (P)
1954 CELTICS DEMO MAKER (NP)
1987 QUICKBENCH* (NP)
1990 NIGHTFLYERS UTILITIES IV (NP)
2004 TURBO IMPLODER V4.0 (P)
2012 DRAW MAP V2.3D (P)
2058 VECTOR BALL EDITOR* (NP)
2168 MESSYSID
2174 ANTI-VIRUS V3.14 (P)
2176 KIDS PAINT (P)
2180 TEXT ENGINE
2181 AMIGA FOX DTP
2182 WINDOWS BENCH

MUSIC DISKS

61 J M JARRE - DEFINITIVE (P)
407 CD PLAYER DEMO* (P)
713 FLASH! - QUEEN (2) (P)
724 TECHNOTRONIC REMIX (P)
746 CRUSADERS BACTERIA (P)
941 SOUNDTRACKER JUKEBOX (NP)
976 SCOOPEX BEAST SONIX (NP)
1026 DIGITAL CONCERT VI (NP)
1292 CRUSADERS: GENESIS (NP)
1685 DEPECHE MODE MUSIC DISK
1694 ART OF MED MUSIC (P)
1695 SEAL CRAZY REMIX* (NP)
1713 SPACED OUT VOLUME 1
1714 SPACED OUT VOLUME 2 (P)
1716 I THINK WE'RE ALONE (P)
1717 EVERYBODY DANCE NOW (P)
1718 DOING THE DO (P)
1755 AMAZING TUNES 2 (3)* (NP)
1993 CATS SING KYLIE! (NP)
2006 SAMPLE SENSATIONS* (NP)
2008 MOVE ANY MOUNTAIN* (P)
2059 VIVALDI FOUR SEASONS (2)* (P)
2159 CHARLY (P)
2160 WHAT CAN YOU DO FOR ME? (P)

SLIDESHOWS

282 FORGOTTEN REALMS (P)
617 NEIGHBOURS SLIDESHOW
725 DIGGY PIGGIES (2) (NP)
742 MADONNA SLIDESHOW (P)
814 VIZ SLIDESHOW (P)
891 CREEPSHOW (P)
899 MADONNA SLIDESHOW 2 (2)* (NP)
968 GOREZONE SLIDESHOW (X) (P)
1051 TOTAL RECALL SLIDESHOW (NP)
1085 COMIC SLIDESHOW (X) (NP)
1103 SPORTS ILLUSTRATED GIRLS (P)
1263 RICHTER S/SHOW (2) (2D) (P)
1277 DIVINE VISIONS (2)* (NP)
1279 FORGOTTEN REALMS '90 (P)
1708 INVISIBLE WORLD (P)
1719 YABBA DABBA CARTOONS (P)
1876 REFLECTIONS 6 (NP)
1835 NIGHT BREED SLIDESHOW (P)
1901 LEEDS UNITED SLIDESHOW (P)
1919 DEBBIE HARRY (2) (2D)* (NP)
1781 REFLECTIONS (NP)
1984 TERMINATOR SLIDESHOW (NP)
1986 ALIENS SLIDESHOW (NP)
1991 AQUARIUS IMAGES (P)

BLANK DISKS

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Roctec Disk Drive	£59.99
Cumana Disk Drive	£59.99
1000 Disk Labels	£12.99
Stereo Audio Leads	£3.99
Furry Mouse Cover	£3.99
Printer Ribbons	Various

We stock all *Deja Vu* Licenceware Full written details on request

HOW TO ORDER

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POSTAGE
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Rest of world...Add 4.00
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Loads of titles to choose from!

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We stock commercial games, accessories, blank disks, etc.
Open Monday to Saturday
9.30am - 5.30pm
CALLERS WELCOME

KEY TO SYMBOLS USED

(2) = Number of disks
* = 1Mb ** = 2Mb, etc.
(2D) = 2 drives, (X) = Adults only
(P) = A500 Plus Compatible
(NP) = Not A500 Plus Compatible

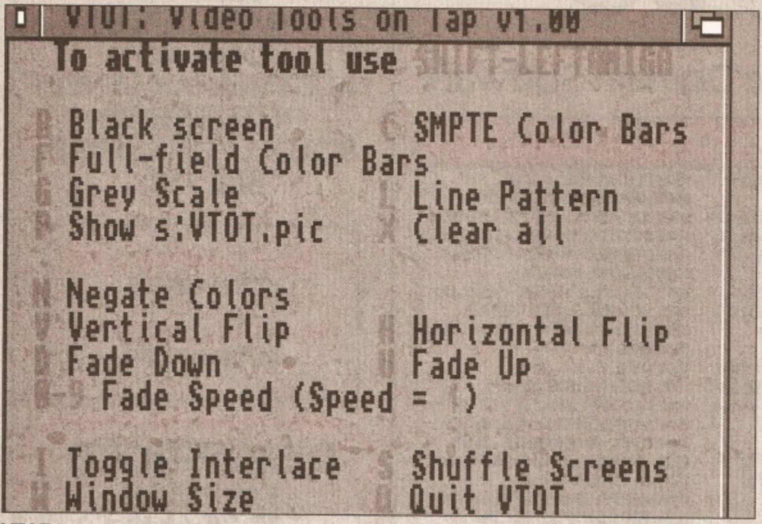
PD PACKS

GAMES PACK 1
(Some 1Mb* - not A500+)
37 titles including
Invaders, Tetris, Asteroids, Missile Command and many more!
8 DISK SET ONLY £7.95!

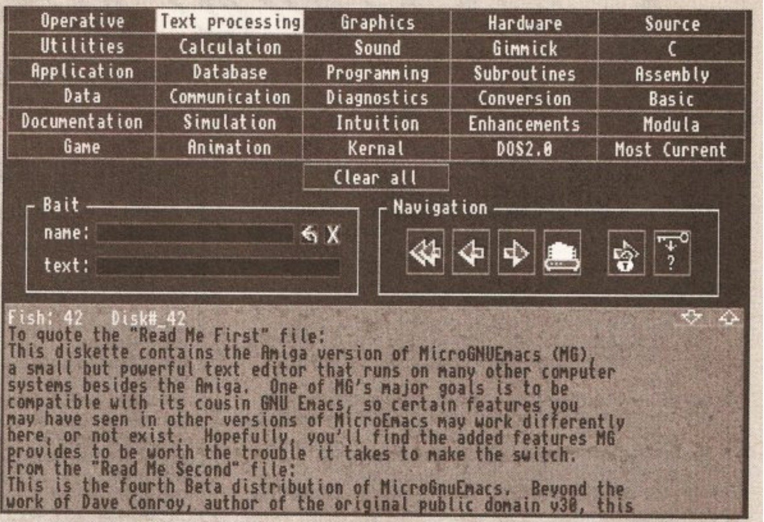
GAMES PACK 2
(1Mb only - not A500+)
Balloonacy, Crossfire, Twintris, Wizzy's Quest, Arcadia
5 DISK SET ONLY £4.95!

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(Any Amiga - A500+ compatible)
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5 DISK SET ONLY £4.95!

GAMES PACK 4
(Not A500+ compatible)
Card & Board Games, Shapes, Frantic Freddie, Serene II, Mental Image Games
5 DISK SET ONLY £4.95!



VTOT, one of the programs on the *Image Utils* collection, is a tool for anyone who uses the Amiga for video, providing a range of basic effects such as a fade to or from black at the touch of a key combination



Now the contents of all the Fish disks can be yours – well, the contents listings. *Aquarium* allows you to search by file name, type of program or text within the description. Some of the programs are oddly classified, though

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hand, if you've got a hard disk you can directly decompress the archives, using *LHarc*. It took me 10 minutes to decompress all the files, install the font and sort out the directory structure – the installers here will do this automatically.

Although A64 will work on a floppy-only 1Mb A500, the author (Cliff Dugan at QuesTronix) advises that you have at least 1.5Mb, and you really need either two floppy disk drives or (ideally) a hard disk from which to run the program.

> **"Image Utils is a sort of mini Art Department Professional."**

As well as the actual C64 emulator, the package includes 120+ pages of documentation (and a program to allow you to print it all out) and a set of utilities to allow you to convert C64 files to Amiga format for storage. And that's where the question of how to get your 64's files into the Amiga rears its head. But never fear – it's cheaper and easier than you probably thought. Just register the program by sending $39.95, plus $5 for shipping, to QuesTronix and you'll be supplied with a hardware interface and accompanying software which will let you hook your C64's disk drive and printer to your Amiga – far cheaper than junking all that software which you bought for the 64!

The other question which will be rearing its head by now is, "What about copyright? Surely the C64's ROMs are Commodore's copyright?" Well, you're right – and TheA64Package doesn't rip them off. Instead, the program contains a C64 ROM emulator, which includes a version of the 64's BASIC. And it seems to work very well – I couldn't fault it during the time I used it, anyway. But there's even better news for C64 owners: when you've registered the program and obtained the interface, you can actually dump your C64's ROMs to disk and then load them into the A64 for full compatibility.

I only have one complaint with this program: the two keymaps which you can use are US and German, so even if you've set up your Workbench disk with the GB keymap you'll find that things like the speech marks, £ sign and # appear in the wrong places on your keyboard. But that's a small price to pay; I'd heartily recommend that everyone who owns both a Commodore 64 and an Amiga to get hold of, and register, this program – after all, you're unlikely to get an Amiga emulator on your 64!

Program rating....................9/10

Update • Update • Update

***Term*, the rather excellent comms package reviewed last month, has undergone an upgrade. The latest version is 1.9c, and now requires Workbench 2.x – Kickstart 37.175 and Workbench 37.67 or higher must be present for the program to run. A number of bugs have been fixed in this new release, which can be found on Fish disk 589 from Unique Computing.**

IMAGE UTILS
PD Soft disk v518

Image Utils is a collection of image and video tools. The first program here is *ImageLab*, by Gary Milliorn. This is a brilliant image manipulation program, which includes things like filters (pixellate, sharpen, blur and so on), vertical and horizontal flips, fast Fourier transforms, palette changing and so on and so on. Images can be saved after transformation, and there are functions available for producing graphs of colour usage and other such vital information. A sort of 'mini *Art Department Professional*', this is a great program for serious image manipulation or just for playing around and experimenting.

Next up is *VTOT*, or *Video Tools on Tap*, by Mike Berro. This is a collection of tools for video professionals, and includes *VTOT* itself, which will do things like flip the screen or fade to/from black when you press various key combinations. Also from Mike in this collection are programs which help to calculate SMPTE codes, generate test cards and switch your Amiga into interlace mode, regardless of whether a given program wants it to be or not.

ShowFont, by Arthur Johnson Jr, is a tiny program which does just that – it displays all 256 characters of any font which your Amiga has installed. Not the most exciting application in the world, but some may find it useful.

As well as these we have *JPEG*, an image compressor which uses the Joint Photographic Experts Group image compression standard, and *TitleGen*, which displays scrolling titles.

All in all, *Image Utils* is a comprehensive collection of programs, some more useful than others but most worth a look. Certainly ImageLab wins a place on my hard disk!

Value for money 8/10

DISK MAGAZINES

I've only had a couple of disk magazines in for review this month – come on the rest of you, why aren't I seeing your efforts? So, here's what came my way this month...

AMIGA USERS GROUP – FYLDE
NewsDisk issue 1

This is the first disk from AUGF, but is set to be a regular feature.

Membership of the group is free if you happen to live in the Fylde area. However a subscription to the NewsDisk will cost you £6 for six months, or £10 for a year.

Send your cash to 25 Glen Eldon Road, Lytham St Annes, Lancs.

The disk itself is rather different to many, in that it's not auto-booting and doesn't have a flashy menu. Instead there are tons of text files, including tips, tutorials and reviews, as well as a few pieces of PD (the issue I saw included *FreePaint*, *LHarca* (a compression utility) and *BootX* (a virus killer). The group's own PD library catalogue is also on the disk.

Although the grammar and spelling are not the best I've ever seen (there does seem to have been a serious outbreak of apostropheitis in the editorial office), the actual content is fairly good, interesting stuff, written by a number of different people.

What's more the group claims that if you write an article, it will get printed – the only censorship they'll do is to remove bad language and/or bad taste material.

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1624 JAMES BROWN IS DEAD
1623 CYBERSOUNDS
1622 TRACKERS POWER+AGONY
1621 A HYPNOSIS SOUND BOX
1621 B ON 2 DISKS
1620 PRODIDGY REMIX (+ ONLY)
1619 A SCENERY ANIMS
1619 B FRACTALY GENERATED
1618 VIRUS KILLERS
1617 TWILIGHT ZONE REMIX
1616 ROOBARB+CUSTARD REMIX
1615 JAMES BROWN IS DEAD 2
1614 SAMPLE MAKER V1.0
1613 PROCALC V1.0

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F359 A BRIDGE
F517 AMIBANK
F120 INVADERS
F495 ANALYTICALC
F301 AQUARIUM
F208 ASTEROID FIELD
F94 AUDIO TOOLS
F120 BACKGAMMON
F537 BOOT GAMES
F361 BRUSH 4D
F375 CARD MAKER
F205 CHESS (GAME)
F269 CHESS TUTOR
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LPD62-GAME
LPD61-F CHAPTER2
LPD60-TECHNO SN
LPD59-FUN PACK
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Eric Schwartz is back

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All in all, certainly worth a tenner for a year's sub.

Value for money 8/10

PREMIER 1
By Andrew Dunbar

This is the first disk mag for Andrew, and a good one it is too. It's autobooting, and uses one of the many menu creators to give it a neat front-end. The concept behind the disk seems to be: "Forget editorial, cram those programs on!" Although there's a message from the editor, there are no articles – just lots of PD. The programs are split fairly evenly between games and serious stuff, so to balance things like *PowerSnap* (reviewed in the last issue of *Amiga Shopper*) and AmigUtil II, a disk copier and general toolkit, are games like *3D Pool* and *Invaders*.

The first issue of *Premier* was free, in order to encourage people to get hold of it; from issue two (which should be out now) onwards, the price is £1.50, or £17 for a year's subscription.

Send cheques or postal orders to: Andrew Dunbar, 180 Mountsorrel Lane, Rothley, Leicester LE7 7PW.

QUICKIES

DISDF
Fish disk 558

This tiny utility from Patrick F Misteli does one simple job – stops that bloody annoying clicking of your floppy disk drive when no disk is present.

Run *DISDF* once to disable the drives, run it again to re-enable them. It can be either run from the Shell or from the Workbench (if you've not got WB2 and thus can't 'show all icons' you'll have to create an icon for it, since none is supplied).

Floppy drives can be selectively disabled/enabled, or the command can apply to all at once. Don't do what I did, though, and try to disable the drive which contains the disk with the program on it – berk!

Program rating.....................7/10

BLINK AND YOU'LL MISS IT

Don't miss next month's Public Domain World – I'll be doing a round-up of PD and shareware word processors. So if you've ever wondered what these cheapies have to offer make sure to reserve your copy of *Amiga Shopper* now!



One of the better images from the Cartoon brushes disk

AQUARIUM
Fish disk 559

Aquarium, by B Lennart Olsson, is a database of Fish disks – if you want to know what disk a program is on, or find, say, a text processing utility, this is the disk for you. Files can be searched for by type, name or text in the description, and a program is included to allow you to add the contents of new Fish disks as they appear. The contents of disks 1-550 are already in the database.

> *"To view the lattices in Crystals you will need a pair of 3D glasses."*

Although the program isn't the fastest in the world when searching by text in a description, and although you need a hard disk drive to use it (the database is too big to fit on a floppy), it's still the best way of finding out where that elusive program is in the vast Fish collection.

Program rating.....................9/10

CARTOON BRUSHES
Software Expressions disk U092

The disk's name says it all, really – it contains a selection of cartoon characters saved as *DPaint* brushes, ready for use. The disk also has 'Viewilbm', an IFF viewer, so that you can see the images without loading DPaint. And, frankly, you might as well do that then re-format the disk; the quality of the illustrations just isn't that great.

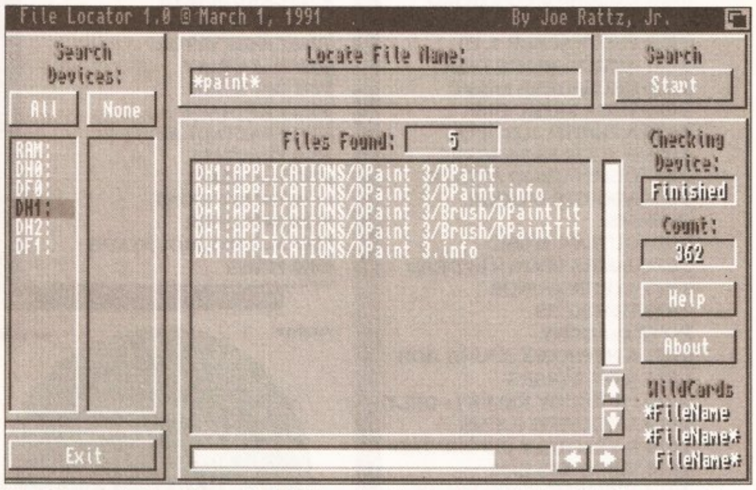
I'm sure that illustrator Gareth Lancaster spent a good deal of time on the cartoons, but I've seen far better. Still, one or two of them are pretty good, so if they happen to be the ones that you want, you'll end up happy.

Value for money..................5/10

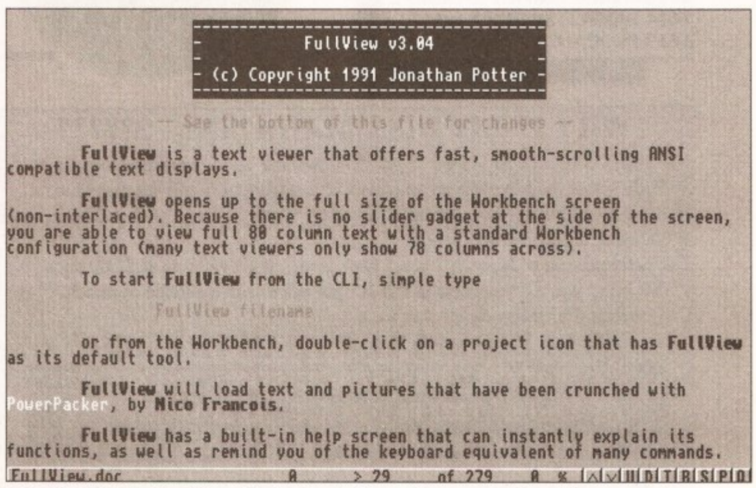
FILELOCATOR
Fish disk 581

This $5 shareware program, by Joe Rattz, Jr, is a major improvement on *FileSearch*, which I reviewed last month. *FileLocator* is is 'find file' program which provides everything that *FileSearch* was missing – a scrolling display of the filenames as it finds them, and on-line help. Select the drive or drives you wish to search, type in the filename (wildcards are supported in the form of '*', which represents any combination of characters) and hit 'Search'.

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Find those elusive files with *FileLocator*. No longer will Macintosh owners be able to scoff at the lack of a 'Find file' utility!



Jonathan Potter's attempt at a text viewer has more than the average selection of options – *FullView* will even display IFF files

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SPECTRUM EMULATOR.......oh! memories
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ANALYTICALC ....powerful spreadsheet
ICONMANIA ....icons & tool
MESSYSID II..................handles PC files
SUPER-DUPER.........a copier that knows
INSANITY TOOLS.................203 utilities
IMPLODER V4.0 ....good cruncher
HAM RADIO UTILS ....17 disks to choose
N-COMM V1.921 ..a very good comms disk

MUSIC
BRUNOS MUSIC BOX .....2 disks - amusing
AMIGA DEUS ....great classical sounds
MANIC RAVES............2 disks - good beat
STAR TREK .... 2 disk comedy
JOURNEY INTO SOUND ....and so it is
LOONY TUNES.......neat gfx & catchy beat
VOGUE CD PLAYER...looks and sounds good
VIVALDI ....2 disk classical
BABY SITTIN BOOGIE .funny sampled song
FLASHING BYTES ....brilliant

ANIMATIONS
VIETNAM CONFLICT (1 meg) ..plane combat
AT THE MOVIES 2 (1 meg) .4 disks of Amy
THE LEMMINGS (1meg) .anim with a moral
ATF AGILITY (1 meg)........antics in the sky
PUGGS IN SPACE...............cute little alien
TIRRENO (1meg)......good ray traced anim
SHUTTLECOCK (1meg) ....very amusing
TERMINAL (1meg) ....doctor help
THE BOINGS (1meg) .cute ray traced guys
CONGAMAN (1meg) ....beat dem drums
DOCTOR A (1meg)..........good sculpt anim
THE DATING GAME (3meg) ...animal antics

GAMES
BOUNCE N BLAST ....brilliant
JETMAN.......................tidy arcade game
EAT MINE ....addictive boulderdash
ESCAPE (1meg) ....great game tidy fgx
BIP......................neat 2 player shoot out
NADROJ ....in d & d style
QUIK AND SILVA.........a real addictive game
ARCADIA ....good Amos breakout
ETHOS ....tidy text/gfx adventure
PROPERTY MARKET .....make your millions
MAHJONG ....nice gfx good game
STAR TREK..............2 disk space voyage
SHAPES (1meg)..............addictive puzzle
DIPLOMACY ....tidy strategy game
MEGABALL........a great game of breakout

LAZER-ZONE...................arcade blast em!
DUNGEON DELVER..2 disk arcade adventure
HOLLYWOOD TRIVIA......an interesting quiz
CHESS PUZZLE ....use those grey cells
TILE TRAIL (1meg)..........tidy puzzle game
PIXIE KINGDOM..........2 disk arcade quest
SEA LANCE ....strategy at sea
POM POM.......a very good blast em game
TWINTRIS ....tetris for two
LIGHTS OUT ....good aim needed
LLAMATRON........a great jeff minter game
PROJECT 1 ....blast the enemy
SEVEN TILES..................futuristic football
TRICKY ....a neat puzzle
BLIZZARD ......an arcade type space game
JEOPARD (1meg) ....classic strategy

SLIDE-SHOWS
WRESTLEMANIA.......muscle filled 2 disker
THE INVISIBLE WORLD ......very interesting
NAGELESQUE ....brilliant artwork
DEMONS III ....great music & pics
HYPERDISK 1 ....good pics and story
AMEGA PARTY GRAPHICS...neat comp piccys
APOLS DIGISHOW..........tidy digitised pics
NEPTUNE PIX........2 disks of satellite pics

DEMOS
HARDWIRED (1 meg)......cool 2 disk demo
CDTV ATTACK.........2 disks - great sounds
GUARDIAN DRAGON..tidy gfx from Kefrens
SKIZZO (1meg) ....entertaining 2 disker
INFINITE DREAMS ....cool demo
PULLING THE TRIGGER (1meg) ....love this
BEATLES DEMO (1meg)...unusual 2 disker
REBELS MEGA II.........................neat gfx
PLASMUTEX.............the greatest plasma
DIGITAL INNOVATIONS ....nice one anarchy
DECAYING PARADISE (1meg) ..great vectors

PD PAYMENT

Is PD for free? Well PD is, but disks, postage and the wages of the men who sit at the machines all day aren't – so be prepared to pay from 99p to £2.50 per disk, although price can vary depending on where disks are bought and from whom. It may depend on how the disks are copied. Obviously if there's an office and a duping machine, then it costs money to run. In any case the only way to find out if it's good value is to spend the cash or read *Amiga Shopper*, of course.

continued from page 150

The program is fast – it found 300-odd instances of '.info' in just a few seconds. I've only one complaint: when you click on the arrows below the scroll bar, the text only moves up or down by one line. You have to release the mouse button and then click again to see another line; why clicking on the arrow couldn't provide a continuous scroll, I don't know. Still, damn good all the same.

Program rating 9/10

FULLVIEW

Fish disk 583

Yes, yet another text viewer, but Jonathan Potter's offering has a few extras that many of the others don't offer.

All gadgets are at the bottom of the screen, and are only one line deep, which maximises the amount of screen area available for viewing the text. Files can be searched for specific text strings, ANSI colour is supported and the program can cope with files which have been compressed by *PowerPacker*. As an added bonus, *FullView* can also display IFF files.

Program rating 7/10

CRYSTALS

Fish disk 590

Crystals, by David McKinstry, is an example of the fact that you can find just about any kind of program you can think of if you try hard enough. It is a 3D simulation of crystal lattices, which you can move around using a joystick. To view the lattices (there are fourteen different Bravais lattices), you will need a pair of 3D (red and green) glasses.

The speed at which the lattices rotate depends very much on the Amiga you are using (you need at least 1Mb of RAM); the frame rate varies between 10 and 30 frames per second. Although basically intended for "educators and students in physics, chemistry and geology", it really is quite an attractive display, and certainly worth a look.

Program rating.....................6/10

IT'S GOODNIGHT FROM HIM...

And it's goodnight from me. Next month, we'll definitely be having the PD wordprocessor roundup, along with the usual look at the best PD and shareware available for the Amiga. If you want to get in touch with me, either write c/o *Amiga Shopper*, Future Publishing, 30 Monmouth Street, Bath BA1 2BW or e-mail me on CIX as 'iwrigley'.

Oh, and to any PD houses out there... if you don't send me stuff, I can't review it! AS

UK PD HOUSES

Amiga Mouse PD
182a High Street
Margate, Kent
☎ 0843 228166

Amiganuts United
169 Dale Valley Road
Hollybrook
Southampton
SQ1 6QX

Akore Shareware
7 Fishergate Point
Lwr Parliament Street
Nottingham NG1 1GD
☎ 0800 252221

AMOS PD Library (also Deja Vu)
25 Park Road
Wigan WN6 7AA
☎ 0942 495261

Anglia PDL
115 Ranelagh
Felixtowe
Suffolk IP11 7HU
☎ 0394 283494

Blitterchips
Cliffe House
Primrose Street
Keighley BD21 4NN
☎ 0535 667469

CanDo PD Library
128 Portland Crescent
Stanmore
Middlesex
HA7 1NA
☎ 081-204 3954

CLS
PO Box 7
Bletchley
Milton Keynes
MK2 3YL
☎ 0908 640763

Crazy Joe's
145 Effingham Street
Rotherham
South Yorks S65 1BL
☎ 0709 829286

EdLib
Scotland Farm
Stockwood Road
Brislington
Bristol BS4 5LU
☎ 0272 723489

Electriclown
90 Notley Road
Lowestoft
Suffolk NR33 0OG
☎ 0502 566752

EMPDL
54 Watnall Road
Hucknall
Nottingham NG15 7LE
☎ 0602 630071

Essex Computer Systems
118 Middle Crockerford
Basildon
Essex SS16 4JA
☎ 0268 553963

George Thompson Services
Cucumber Hall Farm, Cucumber Lane
Essendon
Herts AL9 6JB
☎ 0707 664 654

Goldstar Computers
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Tyldesley
Manchester M29 7BN
☎ 0942 895320

ICPUG
PO BOX 1309
London N3 2UT
☎ 081-346 0050

Kernow Software PD Library
51 Ennors Road
Newquay, Cornwall

Lazerdisk
57 Adamthwaite Drive
Blythe Bridge
Stoke On Trent ST11 9HL

NBS
1 Chain Lane, Newport
Isle Of Wight PO30 5QA
☎ 0983 529594

Office Choice (OC-PD)
Suite 14 Avon House,
Town Centre Cumbernauld G67
☎ 0236 737901

PD Soft
1 Bryant Avenue
Southend-On-Sea
Essex SS1 2YD
☎ 0702 612259

Public Dominator
PO BOX 801
Bishop's Stortford
Herts CM23 3TZ
☎ 0279 757692

Riverdene PDL
30a School Road
Tilehurst
Reading
Berkshire RG3 5AN
☎ 0734 452416

Scanner Disk Magazine
Telescan Computer Services
Handsworth Road
Blackpool FY5 1SB
☎ 0253 22296

Sector 16
160 Hollow Way
Cowley, Oxford
☎ 0865 774472

Seventeen Bit Software
PO BOX 97
Wakefield
West Yorks WF1 1XX
☎ 0924 366982

Software Express
Hebron House, Sion Road
Bedminster
Bristol BS3 3BD
☎ 0272 637634

Softville
Unit 5, Stratfield Park
Elettra Avenue,
Waterlooville
Hants
PO7 7XN
☎ 0705 266509

Start Computer Systems
Barbican House
Bonnersfield
Sunderland SR6 0AA
☎ 091 564 1400

Unique Computers
114 Salters Road
Gosforth
Newcastle on Tyne NE3 3UP
☎ 091-284 7976

Vally PD
PO BOX 15, Peterlee
Co Durham SR8 1NZ
☎ 091-587 1195

Virus Free PD
23 Elborough Road
Moredon, Swindon
Wilts SN2 2LS
☎ 0793 512321

Workbench PD
1 Buccluech Street
Barrow-In-Furness
Cumbria LA14 1SR
☎ 0229 870000

BUYING ADVICE FOR SHOPPERS

Whether buying over the phone or at a local store, here's our advice on how to get what you want

BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.
- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
- The goods must be 'as described'.
- The goods must be fit for the purpose for which they were sold.

If they fail to satisfy any or all of the criteria, then you are then entitled to:

- Return them for a refund.
- Receive compensation for part of the value.
- Get a replacement or free repair.

When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check the hardware or software as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. AS

A CHECK LIST FOR MAIL ORDER BUYING

1 **Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list**

2 **Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?**

3 **Can you see a demonstration? Many products are on display at computer shows around the country.**

4 **Are there any hidden extras? Does it need 1Mb to run, or a hard disk?**

5 **What technical support is provided by the supplier? Does the manufacturer offer after-sales advice? Check before you buy.**

6 **Check the guarantee terms. How long is the free warranty? What does it offer?**

7 **Draw up a list of these details and make them a condition of your order.**

8 **Check the price and delivery details when you order, and make a note of them.**

9 **Note down when you placed the order and who you spoke to.**

10 **When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.**

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WIN • WIN • WIN • WIN • WIN • WIN • WIN • WIN

Get your paws on a free GVP hard drive

Life is *so* much easier with a hard drive. Once you have one, you won't believe you ever managed without one. And, as hard drives go, the GVP Impact II+ is one helluva hard drive to have.

When we reviewed the GVP Impact II+ as part of our hard drive round-up in issue one, we described it as 'the only choice for the power user with money to burn'. Now, thanks to the enormous generosity of the people at Gordon Harwood, you won't have to burn any money – just have a gander at our three questions to the right.

The drive comes in two configurations: in an external case which plugs into an A500's side through-port; and as a card to plug into the expansion slot of an A1500/2000/3000. Both versions have space on-board for up to 8Mb of expansion memory.

We hope you've got your reference works to hand, because this month's challenge is more than a little tricky. But, don't be deterred – give them a go!

Stick your answers on the back of a postcard or sealed envelope, and send it to:
Hard Drive Competition
Amiga Shopper
29 Monmouth Street
Bath BA1 2DL
The closing date is May 8.
Don't forget to state which type of Amiga you have, so we know which type of hard drive to send you. AS



The GVP Impact drive – it's the short cut to improved Amiga performance. Act now and you could win yourself one of these. A great prize we think you'll agree!

THE CHALLENGE

QUESTION 1
What club do you select when teeing off in golf?
a) Manchester United
b) A putter
c) A driver

QUESTION 2
What is the popular name for American open-air cinemas?
a) An open-air cinema
b) A field
c) A drive-in

QUESTION 3
Which incredibly clever genius-type chappie invented the wheel?
a) Alexander Graham Bell
b) Socrates
c) None of the above

Don't let floppies drive you up the wall – get tough, get HARD, get answering our questions and win yourself a GVP Impact drive from Gordon Harwood Computers!

WHO WON WHAT?

Ten copies of *Deluxe Paint IV*, kindly donated by Electronic Arts, were up for grabs. As many of you noticed, our questions are normally far too easy - so that month we decided to include a deliberate mistake (for which, we'd like to emphasise, no-one has been sacked). Thanks to the many millions who tirelessly phoned, faxed and wrote to point it out. The answers are:
1) Andy Warhol is associated with Campbell's soup.
2) Don McLean wrote the song *Vincent*.
3) Matisse and Derain were Fauves.
The winners: David Lewry of Paddock Wood in Kent, Ed Meij from Holland, Bob Franlin of Southsea, Malcolm Rogers of Halesworth in Suffolk, D Hill of Hull, Brian Thomas of Pembroke, S Gaunt of Ipswich, S Josho of London, S Restorick of Liverpool, and J Smith of North Road, London.

TWO SHORT YEARS AGO...

A glimpse through the pages of the Amiga's glorious history...

- Gigatron, a German company working on a portable Amiga, seemed to be running into trouble with Commodore over patents.
- Meanwhile, plans for a portable Amiga leaked from Commodore. There's still no sign of either.
- *The Art Department*, saviour of Amiga graphics bods everywhere, was announced by ASDG.
- The Amiga was voted best computer at the European Computer Leisure Awards.
- Michtron released Fast Fax, a plug-in card for the Amiga capable of transmitting at 9,600 baud.

... AND NEXT MONTH

Next month's *Amiga Shopper* is going to be a goodie, and no mistake. As well as our usual seriously deep coverage of the Amiga scene, there'll be:

- A super-duper mystery free gift.
- The first of a two part practical, no-nonsense *Amiga Shopper* guide to animation.
- RAM – everything (and we mean *everything*) that you ever wanted to know about memory expansion.
- Jon Bates looking at the Miracle Piano Teaching System.
- Ian Wrigley taking the Roctec RocHard disk for a spin.
- See you on 2nd April!

POWER COMPUTING

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Send your order to Power Computing Ltd, Unit 8 Railton Road, Woburn Road Industrial Estate, Kempston, Bedford MK42 7PN
Ring your credit card order through on **0234 843388 (10 lines)** or fax your order on **0234 840234**. Technical Helpline **0234 841882**

All prices include VAT, delivery and are subject to change. Specifications are subject to change without notice. Next day delivery £4·50 (U.K. mainland only), all trademarks acknowledged.

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Tel 215 922 0050 Fax 215 922 0116

